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COMMITTED TO PROTECTION OF THE ENVIRONMENT —

FINAL
CONTAMINATION ASSESSMENT REPORT
CHEMICAL SEWERS - NORTH PLANTS AND SOUTH PLANT
VERSION 3.2

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EBASCO SERVICES INCORPORATED

R. L. Stollar and Associates California Analytical Laboratories, Inc. DataChem, Inc. Geraghty & Miller, Inc.

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LITIGATION TECHNICAL SUPPORT AND SERVICES ROCKY MOUNTAIN ARSENAL

FINAL
CONTAMINATION ASSESSMENT REPORT
CHEMICAL SEWERS - NORTH PLANTS AND SOUTH PLANTS
VERSION 3.2

September 1988 Contract No. DAAK11-84-D-0017 TASK NO. 10



Prepared by:

EBASCO SERVICES INCORPORATED
R.L. STOLLAR AND ASSOCIATES
CALIFORNIA ANALYTICAL LABORATORIES, INC.
DATACHEM, INC. GERAGHTY & MILLER, INC.

Prepared for:

U.S. ARMY PROGRAM MANAGER'S OFFICE FOR ROCKY MOUNTAIN ARSENAL CONTAMINATION CLEANUP

THE INFORMATION AND CONCLUSIONS PRESENTED IN THIS REPORT REPRESENT THE OFFICIAL POSITION OF THE DEPARTMENT OF THE ARMY UNLESS EXPRESSLY MODIFIED BY A SUBSEQUENT DOCUMENT. THIS REPORT CONSTITUTES THE RELEVANT PORTION OF THE ADMINISTRATIVE RECORD FOR THIS CERCLA OPERABLE UNIT.

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Form Approved REPORT DOCUMENTATION PAGE OMB No. 3704-0188 nguring burden for this intertion of information systemated to sure size in our per inspect of the control of the ewing instructions searching data sources and maintaining the data needed using employing any ewing in a precious in control of the J. REPORT TIPE AND DATES COVERED 1. AGENCY USE ONLY (Leave plank) 2. REPORT DATE 5. FUNDING NUMBERS 4. CONTANTINATION ASSESSMENT REPORT, CHEMICAL SEVERS, NORTH PLANTS AND SOUTH PLANTS, TASK 10, FINAL, VERSION 3.2 DAAK11 84 D 0017 5. AUTHOR(S) 8. PERFORMING ORGANIZATION 17. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) REPORT NUMBER EBASCO SERVICES, INC. 88286R08 10. SPONSORING MONITORING AGENCY REPORT NUMBER 9. SPONSORING, MONITORING AGENCY NAME(S) AND ADDRESS(ES) ROCKY MOUNTAIN ARSENAL (CO.). PHRMA 11. SUPPLEMENTARY NOTES 12a. DISTRIBUTION, AVAILABILITY STATEMENT 1 126. DISTRIBUTION CODE APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED 13. ABSTRACT (Maximum 200 words) THIS FINAL REPORT DOCUMENTS THE PHASE I CONTAMINATION SURVEY OF THE CHEMICAL SEWERS IN NORTH PLANTS AND SOUTH PLANTS. NORTH PLANTS: 8 SAMPLES FROM 8 BORINGS WERE ANALYZED. DIMP, CD, ZN, AND HG WERE DETECTED WITHIN OR ABOVE THEIR RESPECTIVE INDICATOR RANGES; HOWEVER, THE CONCENTRATIONS OF CD AND ZN APPEARED TO BE CONSISTENT WITH NATURALLY OCCURRING PHASE II PROGRAM MAY BE NEEDED. IF THIS WORK IS DONE, IT WILL CONSIST OF 4 ADDITIONAL BORINGS. THE VOLUME OF POTENTIALLY CONTAMINATED SOIL PRESENT IS ESTIMATED AT 140,000 CUBIC YARDS. SOUTH PLANTS: 68 BORINGS, YIELDING 103 SAMPLES, WERE COMPLETED IN 11 TRENCHES AND 5 MANHOLES. 37 TARGET ANALYTES AND A LARGE NUMBER OF TENTATIVELY IDENTIFIED NONTARGET COMPOUNDS WERE DETECTED INCLUDING PESTICIDES, HERBICIDES, PROCESS INTERMEDIATES. SOLVENTS, AND METALS. ALDRN AND DECP WERE DETECTED AT GREATER THAN 10,000 14. SUCJECT TERMS SOIL, CHENICAL 15. NUMBER OF PAGES 16, PRICE CODE 17. SECURITY CLASSIFICATION 18. SECURITY CLASSIFICATION 9. SECURITY CLASSIFICATION TO, LIMITATION OF ABSTRACT UNCLASSIFIED

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EXECUTIVE SUMMARY CHEMICAL SEWER - NORTH PLANTS

The North Plants chemical sewer is located within the North Plants manufacturing complex in Section 25 and the northern half of Section 36 on the Rocky Mountain Arsenal. At the present time, the North Plants chemical sewer system is inactive. The sewer system collected process wastewater from various buildings and conveyed it to a sump, Building 1727, where it was neutralized with caustic and then initially pumped to Basin A and later to Basin F through the chemical sewer line. Locations along the chemical sewer were investigated under Task 10 during the fall of 1986. A total of 8 borings were drilled to depths ranging from 5.5 to 6.7 feet, yielding 6 samples for chemical analysis and 2 samples for physical analysis.

The following target analytes were detected within or above their indicator levels in borings directly beneath the sewer line: diisopropylmethyl phosphonate, cadmium, zinc, and mercury. Diisopropylmethyl phosphonate was detected in one boring. Cadmium and zinc were detected together in one sample but at concentrations consistent with the natural levels in the soils being analyzed. Mercury was detected above its indicator range in three borings. Five nontarget compounds were tentatively identified in three borings. These compounds were present at relatively low concentrations in soils directly beneath the sewer line.

Follow-on work may be needed as determined by the Feasibility Study to more precisely define the extent of contamination associated with the North Plants chemical sewer. If this work is done, it will be completed as part of the conceptual or detailed design phase of remedial action for the sewer and will consist of 4 borings yielding a maximum of 18 samples.

Based on historic data and information obtained to date, the estimated volume of potentially contaminated soil along the chemical sewer line in the North Plants area is 140,000 cubic yards.

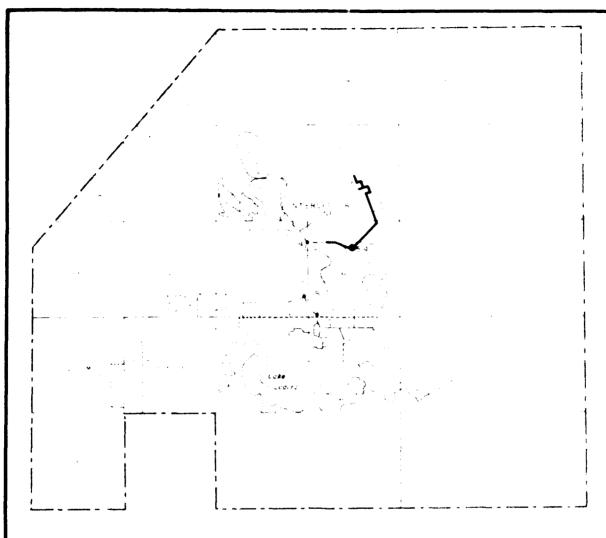
CONTAMINATION ASSESSMENT REPORT CHEMICAL SEWER - NORTH PLANTS

1.0 PHYSICAL SETTING

1.1 LOCATION AND DESCRIPTION

The North Plants chemical sewer is located within the North Plants complex in Section 25 and the northern half of Section 36 on the Rocky Mountain Arsenal (RMA). At present, the North Plants chemical sewer system is inactive. In Section 25, the chemical sewer system is composed of a cast iron pipe (CIP) collection network that transported chemical waste from the Army facilities to an 80,000 gallon sump, Building 1727, where the wastes were neutralized with caustic (Way, 1985). From Building 1727, neutralized waste was pumped south to Manhole 5-4 in Section 36 through pressurized CIP and steel lines. A vitrified clay pipe (VCP) sewer line that extended from Manhole 5-4 west to Manhole 1-4 conveyed waste by gravity to the chemical sewer interceptor line and then to Basin F. The chemical sewer interceptor line and the VCP line west of Manhole 5-1 were removed by the Army in 1982 (RMACCPMT, 1984/RIC 84034R01). The North Plants chemical sewer now terminates at Manhole 5-1 in Section 36. A general map that shows the location of the North Plants chemical sewer system is presented in Figure CS-NP-1. A detailed layout of the North Plants chemical sewer is shown in Plate CS-NP-1.

The North Plants chemical sewer system presently includes approximately 8,900 feet (ft) of 1 inch to 6 inch CIP, 4,100 ft of 12 inch steel pipe, and 2,000 ft of 8 inch VCP (COE, 1957; COE, 1984). Four manholes constructed of brick and mortar are located on the VCP portion of the sewer line. Manhole materials were verified during field operations. A schematic of a typical manhole, including the rim, corbel, apron, channel, and walls, is presented in Figure CS-NP-2. Buildings and facilities in the North Plants area that are connected to the chemical sewer system are listed in Table CS-NP-1.



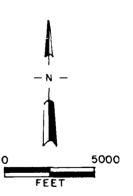
Legend

Contaminated Waste Main

----- Waste Main Removed by the Army in 1982

•1-4 Manhole with Number

Study Area for North Plants Chemical Sewer System



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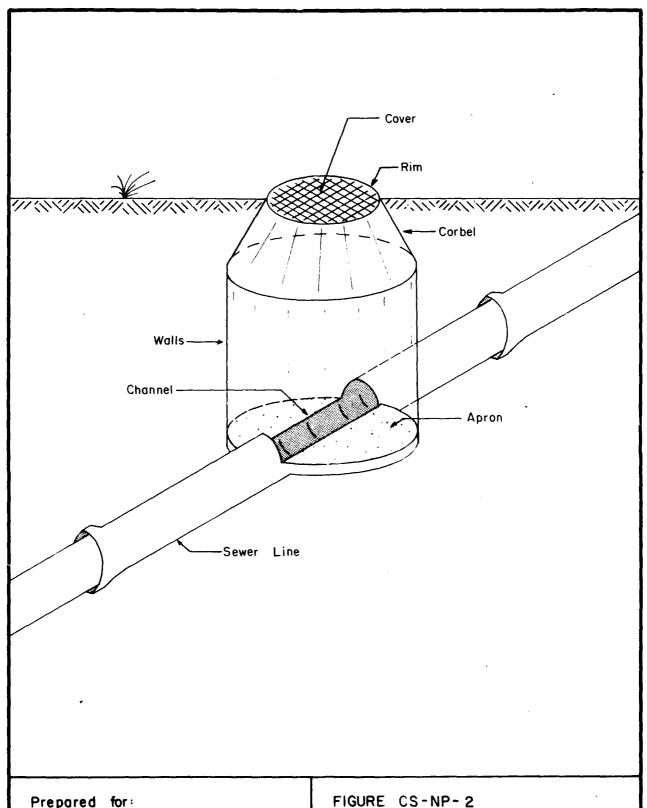
Program Manager's Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground, Maryland

Drafted: 6/5/87

FIGURE CS-NP-I Location Map of the North Plants Chemical Sewer System

Rocky Mountain Arsenal, Task 10

Prepared by: Ebasco Services Incorporated



Prepared for:

Program Manager's Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground, Maryland

8/10/87

Typical Manhole Configuration

Rocky Mountain Arsenal, Task 10

Prepared by: Ebasco Services Incorporated

Table CS-NP-1 North Plants Area Buildings Connected to the Chemical Sewer

Page 1 of 2

Building	Building Description and Use
1402	Tank Farm containing 24 above-ground tanks on concrete supports. Tanks stored methylphosphonic dichloride (dichloro), which was used in GB* production.
1403	Tank Farm containing 14 above-ground tanks on concrete supports. Tanks stored fuel oil for incinerators and boilers. In addition, Buildings 1404, 1405, 1502, 1507, and 1508 are part of Tank Farm 1403.
1404	One 18,000 gallon tank used to store carbon tetrachloride (used as a wash solution for equipment).
1405	Two 18,000 gallon tanks used to store or neutralize (with caustic) hydrochloric acid.
1501	GB manufacturing and demilitarization.
1502	Six 18,000 gallon tanks used to store isopropyl alcohol.
1503	Caustic air stack scrubber building with sump.
1506	Ten 10,000 gallon underground bulk GB agent storage tanks.
1507	One 18,000 gallon tank used to store methyl alcohol.
1508	One 10,000 gallon tank used to store tributylamine (stabilizer).
1509	Isopropanol dehydration unit.
1601	GB munition filling plant, bomb shell degreasing, and demilitarization; demilitarization of phosgene-filled munitions. Houses instrument laboratory.
1601A	GB ton container unloading facility.
1603	Underground plant air stack scrubber.
1606	GB munition building and demilitarization; microgravel mines production.

GB - an organophosphorous nerve agent

Table CS-NP-1 (Continued)

Page 2 of 2

Building	Building Description and Use
1703	Warehouse and maintenance building. Used for demilitarization and salt drying; dried brine from 80,000 gallon waste sump, Building 1727.
1704	Compressed air plant.
1727	80,000 gallon industrial waste sump that received all chemical waste from North Plants operations.

1.2 GEOLOGY

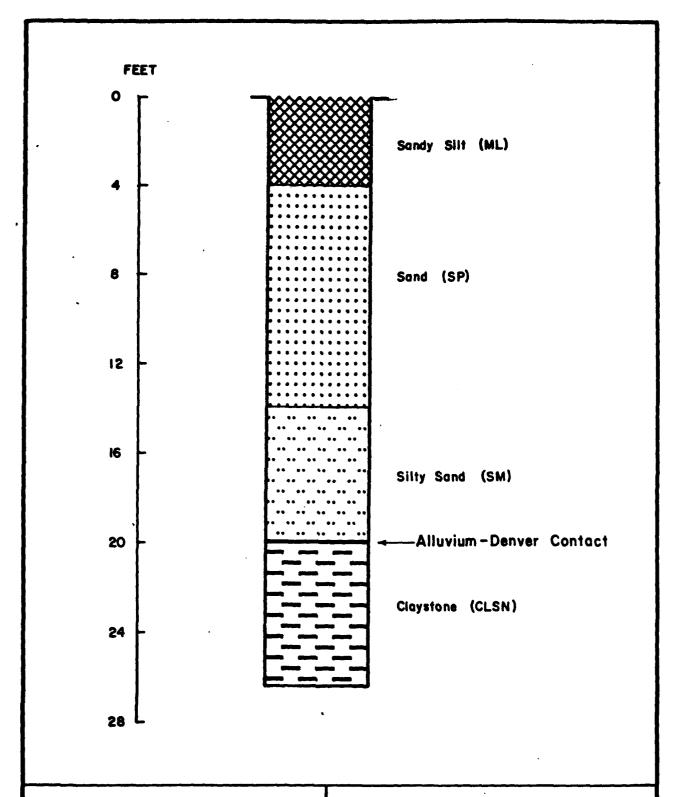
The uppermost stratigraphic units beneath the North Plants chemical sewer system are Quaternary alluvium and the Denver Formation (May, 1982/RIC 82295R01). Task 42 Phase I borings and existing monitoring wells in Section 25 show that the alluvial thickness ranges from 3 ft in Wells 25034 and 25036 to 48.5 ft in Well 25023 (not shown on plates) located approximately 1,700 ft west of Well 25021. A bedrock high covered by less than 3 ft of alluvium forms a hillside on the western side of the North Plants area. Locally the bedrock is exposed in ditches. Coarser sands are generally present at the base of the alluvium in the North Plants area, grading upward into silty sands, then to silty sand with clay, and finally to clayey sand with silt. In Section 36, the alluvium in the vicinity of the chemical sewer has a thickness ranging from 17.5 ft (Well 36122, not shown on plates, located approximately 1,100 ft south-southeast of Well 25038) to 33 ft (Well 36081) and is composed primarily of silty sand and sand with lesser clay. Figure CS-NP-3 shows a typical alluvial profile in the vicinity of the chemical sewer in Section 36 (Well 36090).

The underlying Denver Formation bedrock is composed of claystone, sandy claystone, and sandstone with lesser lignite. The Denver Formation was penetrated by a deep disposal well in Section 26, in which the formation has been interpreted to have a thickness of 250 to 300 ft. A detailed description of the Denver Formation is found in a study by May (1982/RIC 82295R01).

1.3 HYDROLOGY

Surface elevation in the vicinity of the chemical sewer varies from a high of approximately 5,230 ft above mean sea level (msl) in the southwestern corner, to a low of approximately 5,200 ft msl in the northeastern corner. Along the southern portion of the chemical sewer line, which carried waste toward Basin A, the surface elevation varies from approximately 5,225 ft msl to 5,250 ft msl.

Surface water in the vicinity of the North Plants chemical sewer generally flows north and east toward First Creek. Run-off in the North Plants complex, and from the portion of the line from the complex to Manhole 5-4, flows



Prepared for:

Program Manager's Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground, Maryland FIGURE CS-NP-3

Field Boring Profile for Well 36090

Rocky Mountain Arsenal, Task 10

Prepared by: Ebasco Services Incorporated

northeast to First Creek. Surface water from the western portion of the line, which includes Manholes 5-1 to 5-3, flows south and then west to ditches draining into Basin B and Sand Creek Lateral (Plate CS-NP-2). Surface water samples were taken from First Creek, east of the North Plants complex and no analytes were detected (ESE, 1986b/RIC 86317R01).

In the vicinity of the North Plants chemical sewer, alluvial groundwater generally flows to the north-northeast (Plate CS-NP-3). In the northern portion of Section 36, groundwater flows in several directions. A major component of flow is channelled to the northwest, through Basin A Neck, an alluvial-filled bedrock paleochannel located in the northeastern corner of Section 35 and the northwestern corner of Section 36. The alluvium on either side of this channel is unsaturated. Lesser components of groundwater flow in this area are to the north and northeast. Borings drilled under ongoing Task 42 (Ebasco, 1987a/RIC 87336R01) show that the depth to groundwater beneath the central part of North Plants ranges from approximately 48 ft below the ground surface (5,170.7 ft msl) in Boring 6B on the northwestern side of the complex to approximately 18.5 ft (5,180.8 ft ms1) in Boring 42 on the southeastern side. Depth to groundwater in Well 36090, which is within 100 ft of sampled trenches as part of the Task 10 activities (shown on Plate CS-NP-1), was measured at 5,230 ft msl in March 1986 (ESE, 1986b/RIC 86317R01). The elevation is approximately 14 ft below the level of the pipe in Trench MKE 11, and 21 ft below the pipe in Trench MKE 22.

Groundwater quality samples collected in January 1986 from upgradient Well 36082 contained isocian, dichlorodiphenyltrichloroethane, diisopropylmethyl phosphonate, 1,4-oxathiane, 1,4-dithiane, p-chlorophenylmethyl sulfide, p-chlorophenylmethyl sulfone, p-chlorophenylmethyl sulfoxide, m-xylene, chloroform, 1,2-dichloroethane, and trichloroethylene (ESE, 1986b/RIC 86317R01). Historic groundwater data collected between 1976 and 1986 (USATHAMA, 1976-1986) show that downgradient of the North Plants complex, dimethylmethyl phosphonate was detected in Wells 24081, 24084, 24085, 25018, and 25019, chloroform in Well 24081, carbon tetrachloride in Well 24081, dibromochloropropane in Welle 24124 and 24083, organochlorine pesticides in

Well 24124, and p-chlorophenylmethyl sulfide, - sulfoxide, and - sulfone in Well 24124.

Because these compounds are representative of the class of chemicals typically used in the manufacturing and demilitarization operations at North Plants and of those chemicals disposed in Basin A and other disposal sites in Section 36, the presence of these compounds in the groundwater downgradient of North Plants does not indicate that the sewer line is contributing to groundwater contamination. Pesticide-related compounds probably are not related to North Plants operations.

2.0 HISTORY

Information on the history of the North Plants chemical sewer was gathered through a search of the literature and of the Shell I, Shell II, and Juris computer databases. Aerial photographs were not reviewed because this is a buried system.

The North Plants complex was designed and constructed by the Army from 1950 to 1952 for the manufacturing of the nerve agent isopropylmethane-fluoro-phosphonate, called sarin (GB); filling GB munitions; assembly of cluster bombs; and storage of GB, feedstock chemicals, and munitions. Later, the GB facility was used for the following:

- o Phosgene demilitarization from 1965 to 1967 (MF RSA015 F 1959, 1975-1977; MF RMA067 F 0636);
- o Microgravel mine production from 1967 to 1968 (MF RSA001 F 1944-45);
- o M-34 cluster demilitarization from October 1973 to November 1976 (MF RMA100 F 0485, 0488, and 0542);
- o Demilitarization of GB stored in underground tanks from September 1974 to November 1974 (MF RMA106 F 2292-97; MF RMA003 F 1330);

- Demilitarization of GB stored in ton containers from March 1975 to February 1976 (MF RMA106 F 2292-97);
- o Honest John demilitarization from October 1976 to November 1976 (MF RMA106 F 2292-97);
- o Pilot test program for demilitarization of chemical agent identification sets (CAIS) from September 1977 and October 1978 to December 1979 (MF RMA028 F 0502; MF RMA034 F 0720);
- Demilitarization of chemical agent identification sets (CAIS) from May 1981 to December 1982 (MF RMA116 F 0810);
- o Demilitarization of DDT-contaminated small arms munitions from January 1983 to June 1983 (MF RMA030 F 0793; MF RIA037 F 0209-0210);
- o Demilitarization of adamsite (DM) from June 1983 to June 1984 (MF RMA153 F 1935; MF RMA117 F 1298).

The North Plants chemical sewer consists of three major parts; a cast iron collection network, a contaminated waste sump (Building 1727), and chemical sewer trunk lines from the sump to disposal basins.

The cast iron collection network was built by the Army in 1952 as part of the original complex. This network collects waste from the GB processing, filling, and demilitarizing facilities, and from the raw material tank farms. In 1971 the cast iron lines from Building 1501 and the Building 1503 sump to Building 1727 were replaced with glass lined pipe (DOA, 1971).

The chemical waste sump, Building 1727, was also built by the Army in 1952 and was the point of discharge for the cast iron collection system (Vitro, 1951; COE, 1957). Caustic solution and water were added to the sump to neutralize potential Army agent contamination (Barbieri, 1987). From 1952 to 1973 neutralized waste was pumped from the sump to disposal Basins A or F. During demilitarization operations from 1973 to 1976, sump wastes were tested to

certify that they were not contaminated by nerve agents before they were pumped to Basin F. Chemical wastes were pumped to Building 1703 to be spray dried into salts (Watson, 1974; Mack, 1985). The salts were drummed and later taken to an EPA-approved site in Utah (DeCet, 1987). After 1976, all wastes collected in the sump were disposed through the Building 1703 spray dryers (Mack, 1985). In 1982, wastewater of unknown composition was hauled from the South Plants manufacturing complex to Building 1727 (Heim, 1985).

Two pressurized discharge lines transported the neutralized waste from Building 1727 to the disposal basins. Initially the sump was equipped with a 6 inch cast iron pipe, which discharged waste into the unlined disposal pond, Basin A in Section 36 (USAEHA, 1965). In 1956, an asphalt-lined pond (Basin F) was constructed in Section 26 and a chemical interceptor line was installed from South Plants to Basin F (RMA 1975/RIC 81320R05). The North Plants chemical sewer in Section 36 was joined to the chemical sewer interceptor line in Section 35 at Manhole 1-4 by an 8 inch VCP line and four manholes, 5-1 to 5-4. Manhole 5-4 is located at the discharge end of the 6 inch CIP from North Plants. Sometime between 1953 and 1961, a 12 inch steel discharge line was installed to connect the sump, Building 1727, to Manhole 5-4 (Vitro, 1951). In 1982, the chemical interceptor line between South Plants and Basin F was removed, including a portion of the North Plants chemical sewer downstream of Manhole 5-1 (RMACCPMT, 1984/RIC 84034R01).

3.0 FIELD INVESTIGATION

3.1 PREVIOUS INVESTIGATIONS

Two soil types are found in the vicinity of the North Plants chemical sewer system (USDA, 1974/RIC 81266R54). Soils in the western side of North Plants and the southwestern portion of Section 24 are of the Platner-Ulm-Renohill Association, which consists of well drained, loamy soils that formed on uplands in alluvium on interbedded shale and sandstone. To the east and north of this area, along First Creek, soils are of the Alluvial Land Association. This association consists of nearly level poorly drained to well drained loamy and sandy soils that formed in stream and river deposits. There were no soil contamination studies conducted in the area of the North Plants sanitary sewer prior to the current study. Soil contamination of the entire North Plants

complex was addressed by the Task 42 investigations (Ebasco, 1987a).

Although there have been no previous studies of soils in the North Plants area, there have been studies specific to the condition and operation of the chemical sewer system. A study was initiated in 1955 to determine the most economical method of reducing the possibility of groundwater contamination from chemical wastes generated at RMA (Parsons, 1955). As part of this study, waste stream sources and volumes were determined for different areas on RMA. An instantaneous water use of 850 gpm was measured during a peak operating period in June, 1955 in the North Plants area (referred to as "Chemical Corps Plant No. 1"). The brines discharged from the scrubbers were kept dilute (about 5 percent by weight) to avoid plugging the scrubbers. It was expected that the scrubbers alone would generate a stream of about 300 gpm.

In 1960, a study was undertaken to investigate sources of waste generated at RMA, the volume of flow to Basin F, and the composition of the waste (USAEHL, 1960). It was found that during normal operations, the primary waste stream from the North Plants manufacturing complex averaged about 100 gallons per minute (gpm). Fifty gpm came from manufacturing, 25 gpm came from shell-filling operations, and 25 gpm came from operation of charcoal filter scrubbers and maintenance shops. The manufacturing waste streams consisted primarily of caustic (sodium hydroxide), with 15 percent sodium chloride, dichlor, alcohol, hydrogen fluoride, and possibly GB by-products.

Another study was undertaken in 1965 to determine the physical and chemical characteristics of liquid wastes entering the industrial waste disposal system at RMA (USAEHA, 1965). During the study no manufacturing was being done in the North Plants complex, but GB was being redistilled and munitions were being filled with GB and VX, a nerve agent, there. The wastes generated were primarily hydrolysis products of the chemical agents, caustic solution, and washdown water. The total average waste flow was approximately 3 gpm. It was also noted that off-standard batches of agent were neutralized with chlorine and caustic before going to Building 1727. This sump (1727) was investigated under Task 30 by Environmental Science and Engineering (ESE).

The integrity of the chemical waste interceptor line feeding into Basin F was questioned in a 1975 report (RMA, 1975/RIC 81320R05). In 1976, an attempt was made to generate a rough flow balance of the contaminated waste system at RMA to determine if flow was being lost on the way to Basin F (RMA, 1976/RIC 81339R21). In the North Plants area, operations were far below design capacity and pumping to Basin F was only being done on an "as required" basis. Pumping operations were determined by the level of liquid in the contaminated sump, Building 1727, and were controlled by boilerhouse personnel. Data collected show that the pumps were run about every other day for 5 hours. The study found evidence of infiltration into the chemical sewer system when flow was detected at the farthest downstream metering station at a time when the pumps in the contaminated sump were not operating. Recent rains were believed to have produced the infiltration.

Potential soil and groundwater contamination at the North Plants complex is currently being investigated under Task 42 (Ebasco, 1987a).

Shell Oil Company, through their consultant Morrison-Knudsen Engineers, Inc. (MKE), conducted investigations of the sewers at RMA prior to the PM-RMA studies. As part of their study, MKE excavated two trenches, 11 and 22, along the VCP portion of the chemical sewer in Section 36 just south of North Plants. A schematic drawing showing the boring grid used during the drilling program is presented in Figure CS-NP-4 and the trench locations are presented on Plate CS-NP-1. The analytical results are described briefly below and are summarized in Tables CS-NP-2 and CS-NP-3 (HRO, 1987).

Trench MKE 11

Seven samples were collected from Trench MKE 11 and were analyzed for volatile and semivolatile organic compounds, arsenic, and mercury. Methylene chloride was identified twice at concentrations of 2.9 and 2.2 micrograms per gram (ug/g). Diisopropylmethyl phosphonate (DIMP) was detected in all seven of the samples at concentrations ranging from 0.5 to 0.9 ug/g. No arsenic was detected and mercury was found once at 0.68 ug/g in the first sample taken from under the pipe.

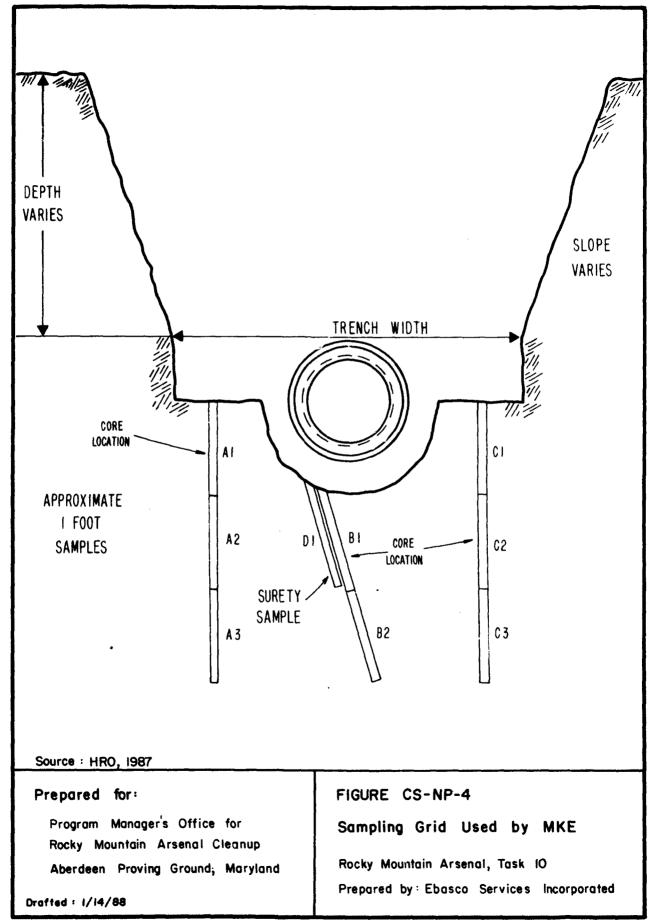


Table CS-MP-2. Results of MKE Sever Investigation: Chemical Sever - North Plants. Page 1 of 2.

			1	Trench MRB 11*	•1		
Berp1 e	¥	Ą	У3	18	B2	ប	23
SOIL CREMISTRY							
Volatiles (ug/g)							
Methylene chloride	Por	708	306	2.9	2.2	308	708
Semivolatiles (ug/g)							
Aldrin Disoprovimethyl phosphomate	30E 0.9	BD£ 0.8	80£ 0.7	#DL 0.6	8DC 0.5	BDL 0.7	80. 0.6
ICP Metals (ug/g)	2	£	¥.	\$	NA AN	\$	2
Arsenic (ug/g)	80£	708	708	BDL	Jou	BOL	708
Mercury (ug/g)	306	JON	DDC	0.68	709	BDL	305

BDL - Below detection limit

NA - Not analyzed

• - Results for 12 of the 24 semivolatile analytes were not recorded

Source: HRO, 1987

5061A/1052A Rev. 8/24/88

Table C5-MP-2. Results of MKE Sever Investigation: Chemical Sever - North Plants. Page 2 of 2.

				Trench MKB 22				
Sample	AI	A2	A3	10	B2	מ	23	ខ
SOIL CHEMISTRY			<u> </u>					
Volatiles (ug/g)								
Methylene chloride	5.2	5.5	7.7	4.6	† :	6.7	0.9	9 .0
Semivolatiles (ug/g)								
Aldrin	108	BDL	308	0.64	PDF	305	BDL	BOL
Disopropylmethyl phosphonate	702	BDL	305	BOL	BDL	PDF	708	108
ICP Metals (ug/g)	\$	NA.	¥	¥	*	\$	MA.	¥
Arsenic (ug/g)	BDL	2.5	BDL	708	9 0ľ.	708	2.3	BDL
Hercury (ug/g)	708	305	BDL	BDL	BOL	708	JOH	305

BDL - Below detection limit NA - Not analyzed Source: HRO, 1987

5061A/1052A Rev. 8/24/86

Table CS-NP-3. Tentative Identification of Nontarget Compounds - MKE Data. Page 1 of 3.

1 - No unknown numbers are given for target compounds detected by volatile organic analysis (VOA)
 2 - Concentrations are order-of-magnitude approximations
 Source: HRO, 1987

0094U/0185A Rev. 2/25/88

Table CS-NP-3. Tentative Identification of Nontarget Compounds - MKE Data. Page 2 of 3.

Best Fit	G7 alcohol hydrocarbon phthalate G6 aliphatic aromatic amine carboxylic acid, ester	methyl cyclohexane phthalate ester oxygen substituted alkene oxygen substituted alkene hexane	methyl cyclohexane phthalane ester oxygen substituted alkene hexane	methyl cyclohexane hexadecanoic acid phthalate ester oxygen substituted alkene hexane	methyl cyclohexane phthalate ester oxygen substituted alkene oxygen substituted hydrocarbon hexane
Goncentration ² ug/g	0.0 0.0 0.2 0.5 0.5 0.5 0.5	0.2 1.0 17 2.7 1.5	0.4 1.1 22 1.4	0.3 0.4 1.1 11 2.5	0.4 1 9.2 1.1 2.7
Unknown ¹ Number	535 557 613 095 103	520 612 622 623 104	520 612 622 104	520 611 612 622 104	519 612 622 622 104
Interval	62	¥7	V	A3	18
Trench	11	22	22	22	22

1 - No unknown numbers are given for target compounds detected by volatile organic analysis (VOA)
 2 - Concentrations are order-of-magnitude approximations
 Source: HRO, 1987

0094U/0185A Rev. 2/25/88

Table CS-NP-3. Tentative Identification of Nontarget Compounds - MKE Data. Page 3 of 3.

1 - No unknown numbers are given for target compounds detected by volatile organic analysis (VOA)
 2 - Concentrations are order-of-magnitude approximations
 Source: HRO, 1987

0094U/0185A Rev. 2/25/88 Analysis for nontarget compounds found low levels of compounds tentatively identified as hydrocarbons, alcohols, acids, esters, amines, and phthalates, with concentrations ranging from 0.3 to 5.6 ug/g.

Trench MKE 22

Trench MKE 22 yielded eight samples from three borings, one on each side of the pipe and one from under the pipe. Results from the volatile organic analysis showed methylene chloride present in all eight samples at concentrations ranging from 4.4 to 6.7 ug/g. No method blank data were supplied, but because methylene chloride is a common laboratory solvent, its presence at this relatively constant level in all samples may be an indication of laboratory background. Results obtained from the semivolatile analysis showed aldrin at a concentration of 0.64 ug/g in the sample taken from directly under the pipe. Arsenic was detected in two samples at 2.3 and 2.5 ug/g, and no mercury was detected.

Several nontarget compounds were noted, the most common being those tentatively identified as phthalate ester, methyl cyclohexane, hexane, oxygen-substituted alkene and hydrocarbon, cyclohexane, propanone, and butanone. Concentrations were generally low, less than about 2.5 ug/g. The exceptions to this were the oxygen-substituted alkene (0.9 to 22 ug/g), cyclohexane (9.7 ug/g), hexane (1.2 to 2.7 ug/g), 2-butanone (9.1 ug/g), 3-pentanone (2.9 ug/g), and hexamethyl-cyclotri-siloxane (3.0 ug/g).

3.2 FIELD SURVEY

3.2.1 Field Program

Using the methodology presented in the Task 10 Technical Plan (Ebasco, 1987b), the field investigation program for the North Plants chemical sewer system consisted of a manhole reconnaissance survey, observation of MKE trenching operations, and sample collection in MKE trenches. Hydrostatic testing of the 6 and 12 inch pressure lines originating at Building 1727 was not done at the request of the Facilities Engineer. No geophysical clearance of the sampling locations was conducted for safety purposes as there was no likelihood of encountering unexploded ordnance, buried metal, or other buried objects.

Four manholes in the system were inspected, Manholes 5-4, 5-3, 5-2, and 5-1. These are located along the VCP portion of the pipe in Section 36. There are no manholes along the chemical sewer in the main manufacturing area of North Plants. Manhole 5-1 is filled with concrete. The other manholes inspected are square vaults constructed of brick and mortar and are in good condition. The inlet to Manhole 5-4 is the 12 inch steel force main originating in North Plants, and the outlet is vitrified clay pipe. Both pipes are slightly above the level of the vault floor, and there is no invert channel. Approximately 20 ft to the west of Manhole 5-4 is a manhole containing a v-notch weir, and to the north (approximately 12 ft) is an air release valve. Manholes 5-3 and 5-2 have completely enclosed pipes running through them and contain several inches of sediment saturated with what was assumed to be water. Results of the manhole survey are summarized in Table CS-NP-4.

During the reconnaissance survey, Building 1727, the sump and pump station, was also inspected. The sump was full of water and appeared to be in fair condition, with significant deterioration of the outer portions of the concrete. There are two lines, 6 inches and 12 inches in diameter, exiting the pump station. The 12 inch line empties into Manhole 5-4. The terminus of the 6 inch line is unknown, but it is assumed to have been plugged when the 12 inch line was installed.

Two trenches, numbered 11 and 22, were excavated in Section 36 by MKE. Trench MKE 11 was located approximately 20 ft upstream of Manhole 5-2, and Trench MKE 22 was located downstream of Manhole 5-4. Each trench exposed four sections of pipe and three joints. The pipe consisted of 4 ft sections of vitrified clay pipe with bituminous joint material. The exposed pipe was in generally good condition with rare hairline cracks. Samples were collected from beneath the exposed joints for chemical and physical analysis in each trench. The distribution of analytes detected within or above their indicator levels and the boring grid locations in the trenches are presented in Figures CS-NP-6a and 6b, Section 3.2.4 of this report.

Pable CB-MP-4. Manhole Reconnaissance Survey Observations. Page 1 of 1.

Manhole	bepth	Material Rim	Rin	Walls	Apron	Channe1	Connections Comments	Comments
<u>*</u>			no problems noted					filled with concrete
7	7 E	brick	no problems noted	no probl ems noted	no problems noted	no channel	no problems noted	pipe runs through manhole with no opening; standing water 3 inches deep
<u>.</u>	.	brick	no problems noted	no problems noted	no problems noted	no channel	no probleme noted	pipe runs through manhole with no opening standing water and
7-6	5.7 ft	brick	no problems noted	no problems noted	soft in center	no channel	no problems noted	sediment several inches deep

Locations along the chemical sewer were investigated during the fall of 1986. A total of 8 borings, yielding 6 samples for chemical analysis and 2 samples for physical analysis, were completed along the North Plants chemical sewer line as follows:

Trench	Boring No.	Depth From Ground Surface (ft)	Depth Beneath Sewer Invert(ft)	No. of Samples
MKE 11	1	5.6	0.6	1
(Trench depth =5	ft) 2	6.1	1.1	1
-	3	5.8	0.8	1
	Physical	5.5	0.5	1
MKE 22	1	6.1	1.1	1
(Trench depth =5	ft) 2	6.0	1.0	1
•	3	6.7	1.7	1
	Physical	5.9	0.9	1

Samples for chemical analysis were analyzed by gas chromotography/mass spectrometry (GC/MS) for semivolatile organics; by an inductively coupled argon plasma (ICP) screen for metals; and by separate analysis for arsenic and mercury. Samples were not analyzed for volatile organics because the soil in the trenches had been exposed to the atmosphere. Volatile organic compounds could have escaped by the time the samples were collected. Appendix CS-A presents the specific target analytes for which laboratory analyses were conducted. A summary of the results of these analyses is presented in Table CS-NP-5, Section 3.2.4 of this report. Physical samples were analyzed for fluid content, density, compaction, and grain size distribution. Results from these analyses were used to determine if the pipe and bedding material were properly designed and installed.

3.2.2 Field Observations

In situ air monitoring was conducted during drilling operations for safety purposes using a photoionization detector (HNU). All in situ volatile organic readings were recorded at background levels. The results of the volatile organic readings in the borehole at the sampled depths are presented in Table CS-NP-6, Section 3.2.4 of this report.

An M18A2 test kit was used to monitor for the presence of chemical agents in the borehole and samples according to standard operating procedures. The

M18A2 is used as a backup test if an M8 alarm is triggered, as a substitute for an M8, and as a specific check for the presence of mustard. The M18A2 detects G agents, V agents, all forms of mustard, and lewisite. Specifically at RMA, the M18A2 test kit is used to detect GB (sarin), VX, H (mustard), ND (distilled mustard), and L (lewisite), based upon the knowledge that these agents were manufactured, stored, or demilitarized at the site. The detection limit for all mustard agents is 0.5 milligrams per cubic meter (mg/m³); the detection limit for all G agents, VX, and L, is 0.2 mg/m³.

No chemical agents were detected at these locations by the M18A2 test kit. No unexploded ordnance, buried metal, or other objects were detected during drilling. No unusual coloring or staining of the core samples was noted.

3.2.3 Geophysical Exploration

No geophysical exploration of these trenches was conducted by Ebasco personnel as the trenches had already been cleared and sampled by MKE.

3.2.4 Analyte Levels and Distribution

Diisopropylmethyl phosphonate, cadmium, zinc, and mercury were detected within or above their indicator levels along the North Plants chemical sewer in Section 36. The number of samples containing each analyte, and the concentration range, median, mean, standard deviation, detection limit, and indicator range are listed in Table CS-NP-5. The results of geologic field observations, air monitoring during sampling, and the chamical analysis of each soil sample are summarized in Table CS-NP-6. A summary of results of the geotechnical analysis of each physical sample is given in Table CS-NP-7 and in Figures CS-NP-5a and 5b.

Indicator levels and ranges were established to assess the significance of metal and organic analytical values. The indicator levels are the method detection limits for organic compounds. The indicator ranges for metals reflect the concentrations expected to occur naturally in RMA alluvial soils. Selection of these ranges is discussed in the June 1986 Introduction to the Contamination Assessment Reports (ESE, 1986a).

Table CS-NP-5. Summary of Analytical Results for Chemical Sever - North Plants. Page 1 of 1.

					Concentrat	Concentration (ug/g)		
*	Number of		Madian##	Mean**	Standard Deviation**	DataChem Detection Limit	CAL Detection Limit	Indicator Level
Detected	Semples	Kange						
Voletiles (N=0)				•				,
Not analyzed	0	i	,	ı	•	•	•	
Semivolatiles (N=6)							•	1
Diisopropylmethyl phosphonate		1.0	ı	ı	ı	1.0	D*0	7
ICP hetals (N=6)								•
!	pad	1.3	•			0.74	99.0	1.0-2.0
Chronium	•	8.4-16	12	12	5.6	٠.٠	7.6	20-15
Conner	4	7.5-14	•	,		3 6		25-60
Lead	~	15-18	. 5	, 5	. =	4 7	9.5	08-09
2inc	۰	36-68	2	;	:			;
Arsenic (N=6)	0	•	•	•	í	2.5	5.0	DL-10
Mercury (N=6)	4	.05863	•		ſ	0.050	090.0	DL-0-1

DL - The indicator level is the detection limit for DataChem and CAL Laboratories, as appropriate N - Number of samples analyzed * - Number of samples in which constituent was detected * - Number of samples in which constituent on calculated when constituent detected in fewer than 5 samples * - Median, mean, and standard deviation not calculated when constituent detected in fewer than 5 samples

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Table CS-MP-6. Results of Field Study. Page 1 of 1.

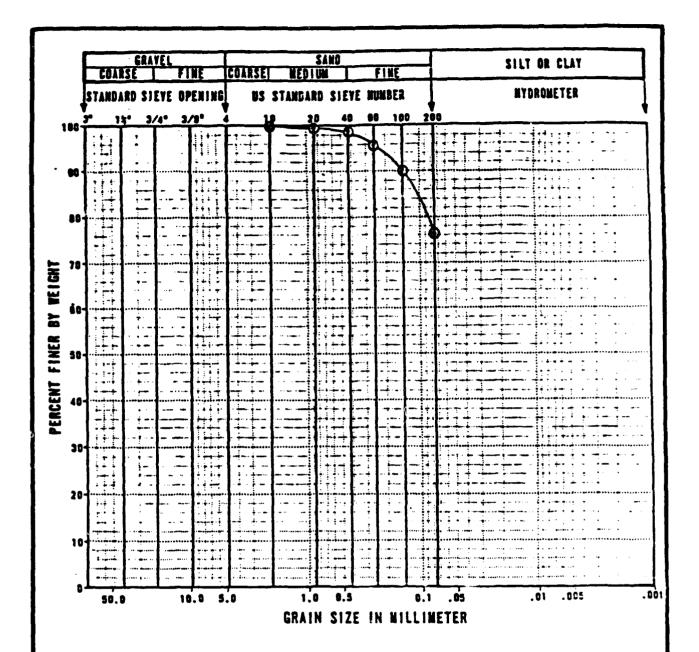
	HKE 111	HKE 112	HKE 113	MICE 221	MCB 222	MKE 223
Depth (feet) Geologic Material	4.8-5.6 Silty Sand	5.2-6.1 Silty Sand	4.9-5.8 Silty Sand	5.2-6.1 Silty Sand	5.3-6.0 Silty Sand	5.9-6.7 Sand and Clayey Silt
Percent PinesVO	30	30	30	04	35	20
AIR NONITORING Volatile Organic Readings (ppm) HNUS	DIC	PKG	W. D	9	9	Q.
SOIL CHEMISTRY Volatiles (ug/g) Not analyzed						
Semivolatiles (ug/g) Disopropylmethyl phosphonate		าดส	201	S C	JQs	70 8
Cedmium (ug/g)	BDL	BDL	BDL	BDL	1.3	108
Chromium Copper Lead	12 14 BDL	13 7.9 15	16 11 BDL	8.4 BDL BDL	10 BDL 18	12 7.5 80C
Zinc Arsenic (ug/g) Mone detected	55	53	S S	36	&	3
Mercury (ug/g)	0.25	0.63	850.	709	0.26	Jag

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BDL - Below detection limit BKD - Background S - As referenced to calibration standard of benzene for HNU; reading has been adjusted to account for background level VO - As determined by visual observation and rounded to the nearest 5 percent

Table CS-NP-7. Summary of Soil Properties Indexes and Harvard Miniature Compaction Test. Page 1 of 1.

rench No.	Boring No.	Depth (ft)	Fluid Content, X	Dry Density, pounds/cubic foot, PCF	Compacted Fluid Content, %	Compacted Dry Density, pounds/ cubic foot, Pcf
ECB 11	Physical	4.6-5.5	16.5	89.5	11.0	114
FCB 22	Physical	5.2-5.9	4.0	87.0	3.5	102



Source: The Earth Technology Corporation, June 1987

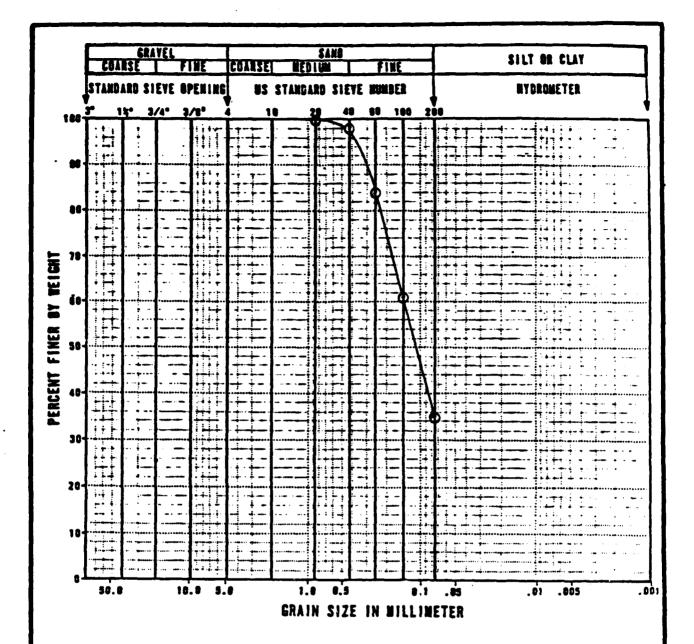
Prepared for:

Program Manager's Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground, Maryland

Drafted: 10/15/87

FIGURE CS-NP-5a
Grain Size Distribution Curve
Physical Sample, 4.6-5.5 ft., Trench
MKE II, Section 36
Rocky Mountain Arsenal, Task 10

Prepared by: Ebasco Services Incorporated



Source: The Earth Technology Corporation, June 1987

Prepared for:

Program Manager's Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground, Maryland

Drafted: 10/15/87

FIGURE CS-NP-5b

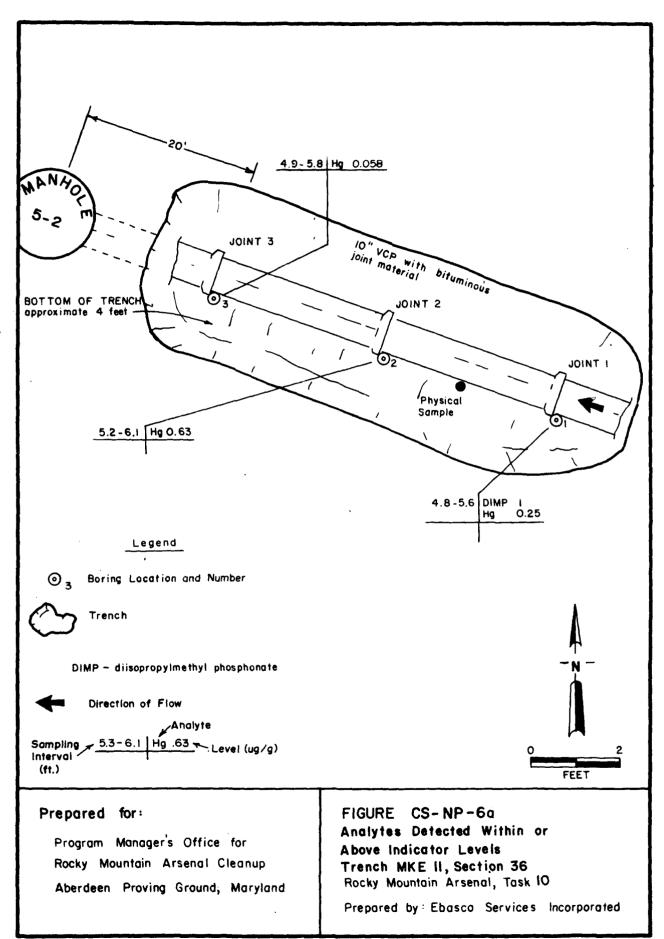
Grain Size Distribution Curve, Physical Sample, 5.2-5.9 ft., Trench MKE 22, Section 36
Rocky Mountain Arsenal, Task 10

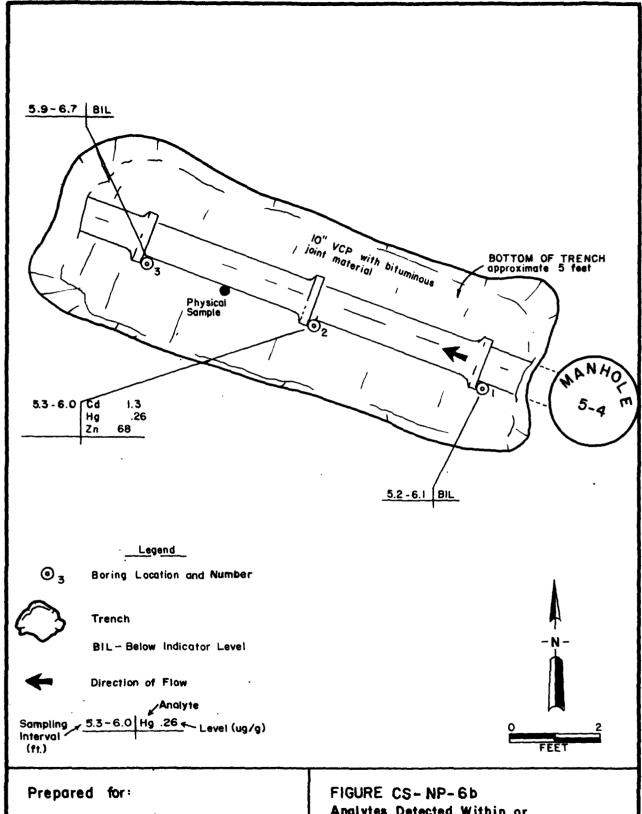
Prepared by: Ebasco Services Incorporated

Diisopropylmethyl phosphonate was detected at a concentration of 1 ug/g in the 4.8 to 5.6 ft interval of Boring 1 of Trench MKE 11. Cadmium and zinc were detected within their indicator ranges in the 5.3 to 6.0 ft interval of Boring 2 in Trench MKE 22 at 1.3 ug/g and 68 ug/g, respectively. Mercury was detected above its indicator range in three of the six samples collected. It was detected in Trench MKE 11 in the 4.8 to 5.6 ft interval of Boring 1, and in the 5.2 to 6.1 ft interval of Boring 2 at concentrations of 0.25 ug/g, and 0.63 ug/g, respectively, and in Trench MKE 22 in Boring 2 in 5.3 to 6.0 ft interval at a concentration of 0.26 ug/g. Mercury was also detected within its indicator range in Trench MKE 11, Boring 3 in the 4.9 to 5.8 ft interval at a concentration of 0.058 ug/g. The distribution of these target analytes detected within or above their indicator levels are presented in Figures CS-NP-6a and 6b. A tabulation of all analytical data associated with this program is presented in Appendix CS-B.

In addition, several compounds were detected by GC/MS that were not included in the target compound list and that were not conclusively identified. Table CS-NP-8 lists the boring number, sample interval depth, relative retention time (shown as "unknown number" on the table), concentration, sample number, lot, best-fit identification, and comments for these nontarget compounds detected in trenches along the North Plants chemical sewer. It should be noted that an individual compound may have more than one retention time, and also that a particular retention time may be assigned to more than one compound. Therefore, Table CS-NP-8 provides only a general indication of additional compounds that may be present.

An unknown hydrocarbon with more than 18 carbons, possibly an alcohol or an alkene, was tentatively identified at 0.5 parts per million (ppm) in Boring 2 of Trench MKE 11 at the 5.2 to 6.1 ft interval. In Boring 3, from Trench MKE 11 in the 4.9 to 5.8 ft interval, one compound tentatively identified as a glycol and two as propanoic acid derivatives were found at concentrations of 0.6 ppm, 0.3 ppm, and 0.5 ppm, respectively. The only other nontarget compound noted was an unknown phthalate, which was tentatively identified at a low concentration in Boring 1 of Trench MKE 22 in the 5.2 to 6.1 ft interval. No nontarget volatile organic compounds were found, as these samples were only analyzed for semivolatile organic compounds in the GC/MS analysis.





Program Manager's Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground, Maryland FIGURE CS-NP-6b
Analytes Detected Within or
Above Indicator Levels
Trench MKE 22, Section 36
Rocky Mountain Arsenal, Task 10

Prepared by: Ebasco Services Incorporated

Drafted:10/16/87

Table CS-NP-8. Tentative Identification of Nontarget Compounds. Page 1 of 1.

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Borehole Number	Interval Depth (fc)	Unknoen Number	Concentration (ppm)*	Sample Number	Lot	Best-fit Identification	Counsents
MECS 111	4.8-5.6			000	BRD		=
HEE 112	5.2-6.1	635	0.5	003	BRD	unknown alcohol or alkene GT C-18	
MCE 113	4.9-5.8	532 572 573	0.0 6.0 6.0	400	BRD BRD BRD	possibly a glycol possibly a propanoic acid derivative propanoic acid, 2-methyl, 3-hydroxy- 2,4,4-trimethyl pentyl ester	
HER 221	5.2-6.1	609	0.5	900	BRD	unknown phthalate	د. ۳
NECE 222	5.3-6.0			900	BRD		¥
NECS 223	5.9-6.7			000	BRD		ĸ

C - Plasticiser
F - Low concentration
GT - Greater than
K - None detected
* - Values reported are blank corrected

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3.2.5 Contamination Assessment

Analyses of samples collected by Ebasco from the two trenches along the North Plants chemical sewer line, in the northern part of Section 36, revealed concentrations of diisopropylmethyl phosphonate, cadmium, zinc, and mercury within or above their indicator levels. Five tentatively identified nontarget compounds of note, an alcohol (or alkene), a glycol, two propanoic acid derivatives, and an unknown phthalate were detected in these samples.

Diisopropylmethyl phosphonate was found at a low concentration (1 ug/g) in one sample taken from beneath the sewer line in Trench MKE 11. Diisopropylmethyl phosphonate, a by-product of GB nerve gas manufacture, was disposed in Basin A through the North Plants chemical sewer prior to 1957, and in Basin F from 1957 to the early 1960s (Ebasco, 1988). Trench MKE 11 is located south of the trash pits in the northern part of Site 36-17N, Task 1. Surface borings performed under Task 1, in the vicinity of Trench MKE 11, did not show signs of diisopropylmethyl phosphonate contamination (ESE, 1986c). Based on this information it appears that the North Plants chemical sewer is the source of the small amount of diisopropylmethyl phosphonate detected at this location.

Cadmium and zinc were the only metals detected at concentrations within their indicator ranges. These concentrations are consistent with those naturally occurring in alluvial materials in which they were found at RMA.

Mercury was detected above its indicator range in three of the six borings drilled along the North Plants chemical sewer. In the past, mercury has been flushed to the chemical waste sump, Building 1727, from the instrument lab located in Building 1601 (MF RMA062 F 2141-2142), and therefore may have been discharged to Basin F through the chemical sewer in Section 36.

Concentrations of mercury ranging from 0.058 ug/g to 0.63 ug/g were found in all three samples from Trench MKE 11 and in a fourth sample from Trench MKE 22. A review of Task 1 data does not indicate the presence of mercury contamination in borings located in the vicinity of the North Plants chemical sewer (ESE, 1986c). Therefore, it appears that the elevated levels of mercury found in this study originate from the chemical sewer.

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The five tentatively identified nontarget compounds detected along the chemical sewer were found at a low concentrations, 0.3 ppm to 0.6 ppm. An unknown phthalate, a plasticizer, was found at a low concentration in one boring and is ubiquitous in the environment or may have originated from the sample containers. The hydrocarbon, glycol, and propanoic acid derivatives are not known to occur naturally and may have originated from the chemical sewer line.

The semivolatile method, although not certified for volatile compounds, has been shown to be capable of detecting tetrachloroethylene, toluene, chlorobenzene, ethylbenzene, and xylenes in the nontarget fraction. The absence of these compounds in the nontarget results for this site is an indication that there is no contamination present from these compounds.

Analysis of samples from the MKE field program showed methylene chloride in 10 of the 15 samples at concentrations ranging from 2.2 to 6.7 ug/g. The frequent detection of methylene chloride within a narrow concentration range may be due to laboratory contamination. Aldrin was found once, directly under the pipe at a concentration of 0.64 ug/g in Trench MKE 22. Diisopropylmethyl-phosphonate was found in all seven samples from Trench MKE 11 at concentrations ranging from 0.5 to 0.9 ug/g. As discussed previously, diisopropylmethyl phosphonate was disposed in Basin F through the North Plants chemical sewer from 1957 to the early 1960s.

Mercury was detected once by the MRE program at a level of 0.68 ug/g in Trench MKE 11. This corroborates mercury concentrations detected by the Ebasco field program.

Nontarget analyses detected several compounds that were tentatively identified as hydrocarbons, alcohols, acids, esters, amines, and phthalates. The alcohol, acids, esters, and phthalates are usually associated with naturally occurring compounds and are common in soils at RMA. The presence of hydrocarbons, however, may be due to the chemical sewer.

As samples were only collected from directly beneath the sewer pipe, it is difficult to accurately assess the extent of potential contaminant migration along the North Plants chemical sewer line. Based on information gathered in this study it appears that potential contamination of soils underneath the chemical sewer line is limited to mercury, aldrin, diisopropylmethyl phosphonate, and some hydrocarbons. At the time the samples were analyzed, the laboratory was not certified to test for the agent products fluoroacetic acid, isopropylmethyl phosphonate, and methylphosphonate, which are breakdown products of GB. Because the only activities in this area were GB manufacture and storage and some Army agent demilitarization, these data will eventually be needed for a complete assessment of potential contamination.

Although no samples were collected from beneath the cast iron and steel sections of pipe, the VCP sections will provide a worst-case estimate of leakage and extent of possible contaminant migration. While steel and CIP will not leak if the sections are joined properly, VCP is anticipated to leak at the joints because the pipe sections are joined with a porous material. The greatest potential for leakage along the chemical sewer line in North Plants is therefore in the VCP portion of the line.

3.3 FOLLOW-ON INVESTIGATIONS

The nature and extent of potential contamination associated with the North Plants chemical sewer have been adequately assessed to determine a worst-case estimate of potentially contaminated soil. Therefore, no follow-on investigations are recommended for the chemical sewer in the North Plants area at this time.

Although a worst-case estimate of potential contamination has been delineated, additional work may be needed as part of the Feasibility Study or design phase of remediation to more precisely define the extent of potential contamination. If the RMA Feasibility Study determines this additional information is needed, the recommended work will be completed as part of the conceptual or detailed design phase of remedial action to be conducted for the North Plants chemical sewer.

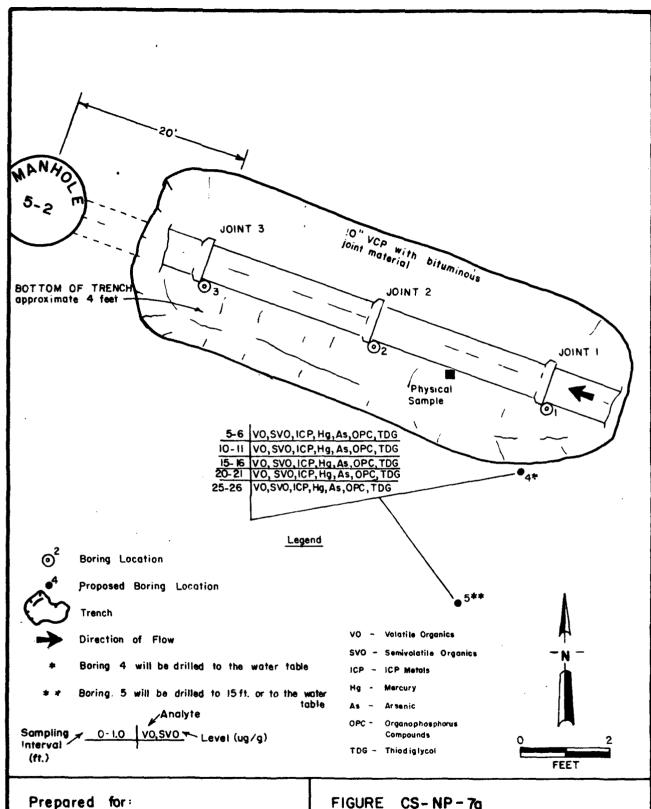
The additional work, if it occurs, will follow the methodology presented in the Task 10 Technical Plan (Ebasco, 1987a) and will consist of two sets of two borings at each of the Trenches MKE 11 and MKE 22 (Figures CS-NP-7a and 7b). Both borings will be drilled from the ground surface, one approximately 1 ft away from the pipe, the other 5 ft away. The first sample will be taken at a depth equal to the bottom of the pipe (approximately 5 to 6 ft) and additional samples will be taken at 5 ft intervals (10 to 11 ft, 15 to 16 ft, etc.). The boring 1 ft from the pipe will be drilled to the water table. The boring 5 ft away will be drilled to 15 ft beneath the pipe or to the water table, whichever is reached first. Groundwater maps indicate the water table is between 10 and 20 ft beneath the sewer at these locations.

It is anticipated that this program will yield 12 to 18 samples, depending on the depth to the water table.

	Depth Below	
No. of Borings	Sewer Invert (ft)	No. of Samples
2 .	Water Table	3 to 5
2	15 ft or Water Table	3 to 4

The samples will be analyzed for semivolatile organics, ICP metals, mercury and arsenic to verify results of the initial investigation and to determine if the compounds detected have migrated away from the pipe. In addition, the samples will be analyzed for volatile organics and agent products (GBDP). As discussed previously, these were not included in the initial investigation, but may be needed to more precisely define the extent of contamination during the Feasibility Study or design phase of remediation. The maximum number of samples to be tested by each analytical method is listed below.

Analytical Method	No. of Samples
Volatile Organics (VO)	18
Semivolatile Organics (SVO)	18
ICP Metals	18
Mercury (Hg)	18
Arsenic (As)	18
Agent Products (GBDP)	18

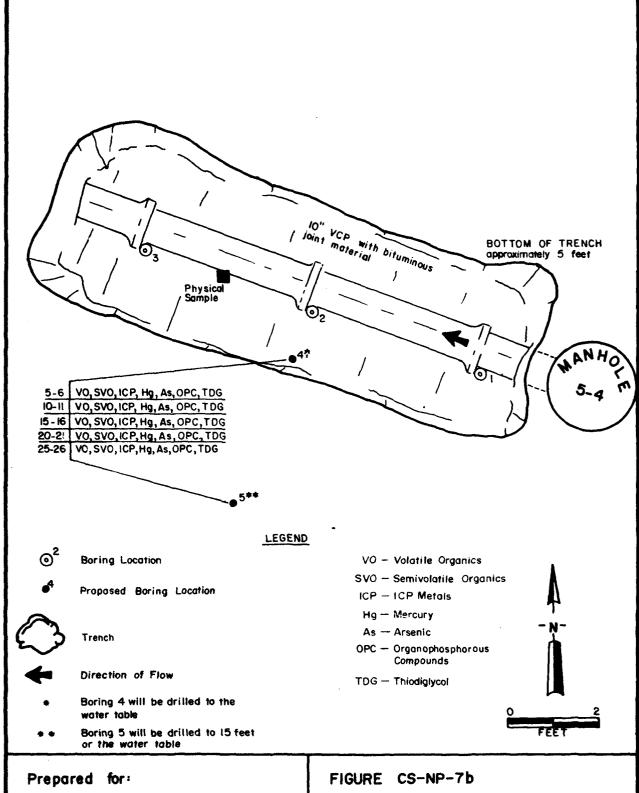


Program Managers Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground, Maryland

Drafted : 2/1/88

Proposed Additional Borings and Sampling Locations, Trench MKE II, Sec. 36

Rocky Mountain Arsenal, Task 10 Prepared by: Ebasco Services Incorporated



Program Manager's Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground; Maryland Proposed Additional Borings and Sample Locations, Trench MKE 22, Sec. 36

Rocky Mountain Arsenal, Task 10
Prepared by: Ebasco Services Incorporated

3.4 QUANTITY OF POTENTIALLY CONTAMINATED SOIL

Based on the results of the field program, the estimated volume of potentially contaminated soil, rounded to two significant figures, is 140,000 cubic yards (yd³) with an estimated uncontaminated overburden of 91,000 yd³.

Because samples were only collected from directly beneath the pipe, additional information is needed to determine the vertical and horizontal extent of potential contamination. No other data are available for the North Plants chemical sewer, so data from the South Plants chemical sewer has been used. The worst-case extent of potential contamination for the South Plants chemical sewer provides a conservative estimate of the extent of potential contamination from the North Plants chemical sewer. Based on data for Trench CS02 (Section 3.2, Chemical Sewers - South Plants, in this report), the soils were assumed to be contaminated to the water table and laterally to a distance of 10 ft on either side of the sewer line. The volume of potentially contaminated soil was determined by dividing the North Plants chemical sewer system into three sections and calculating soil volumes for each. The three sections are: the network of cast iron collection pipes upstream of the sump, Building 1727; the pressurized pipe between the sump and Manhole 5-4; and the VCP line between Manholes 5-4 and 5-1. The numbers given in the following table reflect this division. The pressurized pipe between the sump and Manhole 5-4 is actually two pipes, a 12 inch steel pipe and a 6 inch cast iron pipe. Because the actual distance between the two pipes is unknown, a spacing of 5 ft (60 inches) was assumed.

	Collection Pipes	Pressurized <u>Pipe</u>	<u>VCP</u>
Length of sewer line (ft)	4,800	4,100	2,000
Average pipe diameter (inches)	6	78	8
Average vertical extent of			
potentially contaminated soil			
beneath sewer line (ft)	15.6	15.7	13.9
Average depth of uncontaminated			
overburden (yd ³)	9.3	. 8	6
Lateral extent (ft)	20.5	26.5	20.7

	Collection Pipes	Pressurized Pipe	_VCP_
Estimated volume of potentially			
contaminated soil (yd ³)	57,000	63,000	21,000
Estimated volume of uncontaminated			
overburden (yd ³)	34,000	32,000	25,000

Total estimated volume of potentially contaminated soil = 140,000 yd³.

Results from this survey and the South Plants chemical sewer survey were used to generate a most conservative (worst-case) estimate of the volume of potentially contaminated soil associated with the North Plants chemical sewer. This delineation of the boundaries of potential contamination should not be construed to indicate the actual presence of contamination within the volumes outlined. In addition, this approach is not intended to imply that any or all of the soil within the potentially contaminated volume must be remediated, nor does it make any assumption about the type of remediation that may be required. Rather, this approach is intended to provide preliminary estimates of the maximum possible volume of contaminated materials for planning purposes only.

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LITIGATION TECHNICAL SUPPORT AND SERVICES ROCKY MOUNTAIN ARSENAL

FINAL
CONTAMINATION ASSESSMENT REPORT
CHEMICAL SEWER - SOUTH PLANTS
VERSION 3.2

September 1988 Contract No. DAAK11-84-D-0017 TASK NO. 10

Prepared by:

EBASCO SERVICES INCORPORATED
R.L. STOLLAR AND ASSOCIATES
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Prepared for:

U.S. ARMY PROGRAM MANAGER'S OFFICE FOR ROCKY MOUNTAIN ARSENAL CONTAMINATION CLEANUP

THE INFORMATION AND CONCLUSIONS PRESENTED IN THIS REPORT REPRESENT THE OFFICIAL POSITION OF THE DEPARTMENT OF THE ARMY UNLESS EXPRESSLY MODIFIED BY A SUBSEQUENT DOCUMENT. THIS REPORT CONSTITUTES THE RELEVANT PORTION OF THE ADMINISTRATIVE RECORD FOR THIS CERCLA OPERABLE UNIT.

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EXECUTIVE SUMMARY CHEMICAL SEVER - SOUTH PLANTS

The South Plants chemical sewer system is located in the South Plants manufacturing complex in Sections 1 and 2 on the Rocky Mountain Arsenal. The system carried chemical wastewaters from production units in the South Plants manufacturing complex to disposal sites on the Rocky Mountain Arsenal. The chemical sewer is constructed primarily of 4 to 12 inch diameter vitrified clay pipe. The system was investigated under Task 10 during the winter of 1986-1987. A total of 68 borings, yielding 103 samples, were completed in 11 trenches and in 5 manholes.

Thirty-seven target analytes and a large number of tentatively identified nontarget compounds were detected in samples taken from along the chemical sewer including pesticides, herbicides, process intermediates, solvents, and metals. Aldrin and dibromochloropropane were detected in several samples at concentrations greater than 10,000 micrograms per gram, and a nontarget halogenated hydrocarbon was tentatively identified at 2,000 micrograms per gram. A general trend in several of the trenches and manholes was that the number and concentration of contaminants decreased with distance from the pipe.

No follow-on work is recommended for the South Plants chemical sewer system at this time. Based on the field program, the total estimated volume of potentially contaminated soil is 120,000 cubic yards, with an estimated uncontaminated (by the sewer system) overburden of 120,000 cubic yards.

CONTAMINATION ASSESSMENT REPORT CHEMICAL SEWER - SOUTH PLANTS

1.0 PHYSICAL SETTING

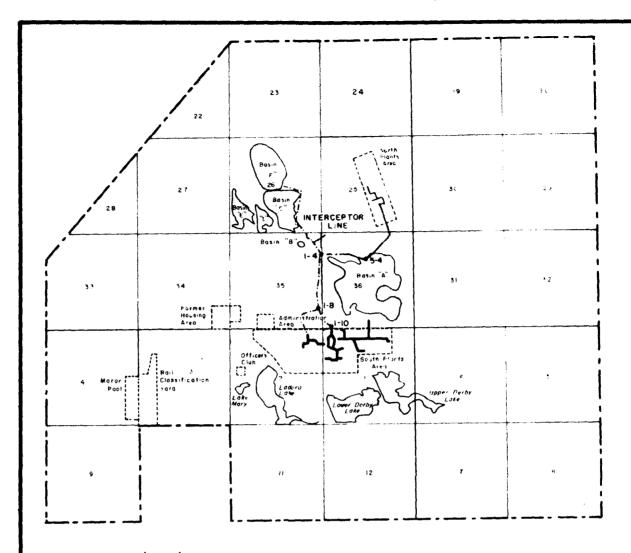
1.1 LOCATION AND DESCRIPTION

The South Plants chemical sewer system is located in the South Plants manufacturing complex in Sections 1 and 2 on the Rocky Mountain Arsenal (RMA). The South Plants chemical sewer system received wastes from various generators including the U.S. Army, Julius Hyman and Company, Colorado Fuel and Iron Company, and Shell Chemical Company.

The majority of the South Plants chemical sewer system was a gravity system constructed of 4 to 12 inch diameter vitrified clay pipe (VCP). The chemical waste stream was initially routed to Basin A and three lime slurry settling basins located in Section 36, and subsequently to Basin F located in Section 26. A general map that shows the location of the South Plants chemical sewer system is presented on Figure CS-SP-1. A detailed layout of the system is shown on Plate CS-SP-1. In the late 1970s, the Army stopped using most of the gravity system and constructed several steel force mains leading to a local waste treatment facility in the South Plants area. Wastes from the hydrazine blending facility continued to be routed to Basin F through the gravity system. At approximately the same time, Shell ceased using the underground gravity chemical sewer system and constructed an overhead collection system. In 1982, the Army removed approximately 15,000 feet (ft) of 8, 10, and 12 inch diameter vitrified clay pipe, which ran from the South Plants area to Basin F, from Sections 26, 35, and 36 (RMACCPMT, 1984/RIC 84034R01; Black & Veatch, 1981). The removed sections served the South Plants chemical sewer system, the North Plants chemical sewer system, and the combined flow from each area. The downstream ends of the South Plants chemical sewers were plugged at December 7th Avenue.

1

Site CS-SP 0070U/0146A Rev. 9/14/88



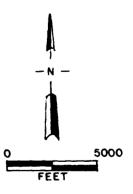
Legend

---- Contaminated Waste Main

----- Waste Main Removed by the Army in 1982

•46 Manhole with Number

Study Area for South Plants Chemical Sewer System



Prepared for:

Program Manager's Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground, Maryland

Drafted: 6/5/87

FIGURE CS-SP-I Location Map of the South Plants Chemical Sewer System

Rocky Mountain Arsenal, Task 10

Prepared by: Ebasco Services Incorporated

The South Plants chemical sewer system presently includes approximately 12,200 ft of vitrified clay pipe varying from 4 to 12 inches in diameter and 2,100 ft of steel force mains (COE, 1984). Manholes are primarily constructed of precast concrete or brick and mortar. The metal pipe joints are welded, and the vitrified clay pipe joints are sealed with oakum and cement (Green, 1987). Manhole materials and pipe joint materials were spot verified during field operations. A schematic of a typical manhole showing the rim, corbel, apron, channel, and walls is presented in Figure CS-SP-2. Buildings connected to the South Plants chemical sewer system are listed in Table CS-SP-1. These buildings are listed by building number, not by the order in which they were connected or disconnected.

1.2 GEOLOGY

The two uppermost stratigraphic units beneath the South Plants manufacturing complex are Quarternary alluvium and the Denver Formation (May, 1982/RIC 82295RO1). This area is underlain by a relatively thin sequence of alluvium that covers a bedrock surface high (May, 1982/RIC 82295RO1). The alluvium in the vicinity of the chemical sewer ranges from 3 ft (Well 01516) to 25 ft (Well 01505). Well locations are presented in Plate CS-SP-3 (Section 1.3).

The thinnest alluvium is present along the line south and west of Manhole W26 (Wells 01517, 01520, 01567, and 01007) and in the vicinity of Manhole W18 (Well 01516 and Trench CS01). The alluvial thickness increases to the north to greater than 20 ft (Wells 01505 and 01525) in the vicinity of the E-series manholes and to approximately 11 ft in the chlorine plant area (Well 02594 and Trench CS03). Alluvial thicknesses penetrated by borings in manholes and trenches during the Chemical Sewers - South Plants field program are shown in Table CS-SP-2.

The alluvium in the vicinity of the chemical sewer, as shown in logs from existing monitoring wells, is generally composed of combinations of silt and clay with lesser sand. A higher sand content is generally present in the

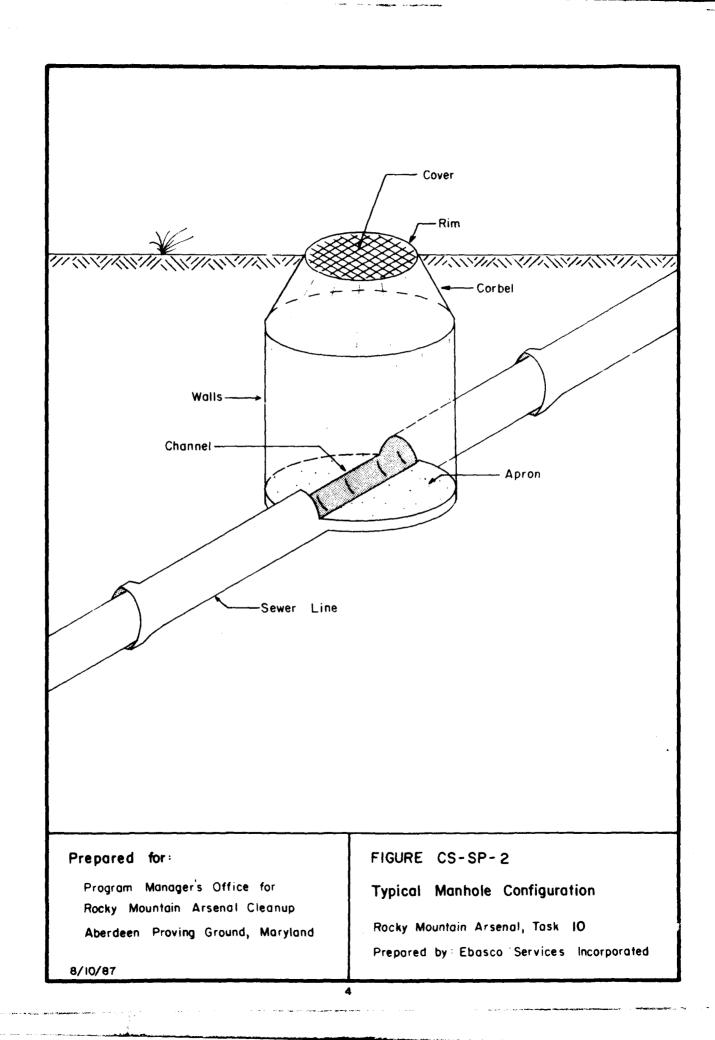


TABLE CS-SP-1 BUILDINGS CONNECTED TO THE CHEMICAL SEWER IN SOUTH PLANTS

Source: Ebasco, 1988b

Page 1 of 3

Building	Building Description and Use
242	Brine conversion to chlorine and dilute caustic
243	Major facility of chlorine plant
244	Chlorine storage
247	Brine storage tanks
249	Brine storage tanks
251	Until early 1960s: caustic evaporation for chlorine
	process; 1960s to 1980: empty; 1980-1982: storage of drummed wastes
313	1947-1951: offices and research lab
314	Laundry
331	Phosgene bomb filling; after 1977: PX storage, warehouse
411	Sulfur monochloride and dichloride manufacture, sulfur
411	storage
412	Mustard manufacture, filling, and storage; dichloro manufacture
413	Steam recycle/condensate control building; white phosphorus storage.
422	Mustard manufacture, filling, and storage; aldrin filling
	and storage
424A	Control room building and lab for aldrin
424C	Aldrin filter building
432	Army warehouse; burned down in 1940s
451	Warehouse; drumming of liquid pesticides
471	Thionyl chloride, pesticide, and herbicide manufacture
473	Thionyl chloride drum loading; storage of nemagon, dibrom, DDVP, supona, and chlordane until 1982

TABLE CS-SP-1

BUILDINGS CONNECTED TO THE CHEMICAL SEWER IN

SOUTH PLANTS

Source: Ebasco, 1988b

Page 2 of 3

Building	Building Description and Use
502	West chemical sewer meter pit
503	East chemical sewer meter pit
506	Denver Effluent Treatment control house
509	Denver Effluent Treatment compressor/liquifier for methyl chloride
511	Manufacturing building; offices and lab
512	1942-1947: distilled mustard filling; pilot plant and
	holding tank for pesticides
514	Lewisite production 1942-1945; mustard distillation
	1945-1947; chlordane and "Strauss Hex" manufacture
	1947-1952; production of endrin, methylparathion, vapona,
	ciodrin, bidrin, ethylparathion and azodrin 1951-1981
514A	Dowtherm Building, lewisite (M-1) crude storage, army
	boiler, burned in 1951, rebuilt
514C	Acid pumping station
514E	Monomethylamine dilution control
515	Chlorinated paraffin, bladex, endrin, and planavin
515A	1954-close: nudrin and endrin tank building.
516	1942-1947: lewisite; 1947-1951: chlordane; 1951-1973:
	endrin and dieldrin muriatic acid recovery
517	1942-1947: Army changehouse, tool room, office and lab
521	Lewisite production; cracking of dicyclopentadiene,
	production of thermal hex
521C	Lunchroom and field foreman office
525	Acetylene generation for lewisite process; process
	development lab; and nudrin manufacture
526	Pesticide filter building
	6

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TABLE CS-SP-1 BUILDINGS CONNECTED TO THE CHEMICAL SEWER IN SOUTH PLANTS

Source: Ebasco, 1988b

Page 3 of 3

Building	Building Description and Use
528	1945-1946: mustard incineration; 1966-1982: pesticide
	refrigeration
529	1942-1951: pumphouse for lewisite and mustard distillation;
	tempered water system for azodrin
531	Warehouse
532	Warehouse, empty containers until 1971;
	1971-1982: planavin, bladex, and atrozine packing
534B	Planavin unit process equipment
536	Storage of crude mustard, acid, and caustic; mustard demil
537	Thaw house for mustard purification; mustard demil
538	Drum disposal; mustard demil
540	Decon building, to renovate mustard containers; evaporation
	of brine
556	Vertical holding tank
561	Bicycloheptadiene process unit; building gutted in 1981
571	Waste vent gas incinerator
571B	Reavy and light organics tank room; hex bottom storage
724	Denver Effluent Treatment salt handling and incineration
727	Electric, auto, and carpentry shop
729	Storehouse, maintenance shop, changehouse, and office
732	Napalm production, M-19 manufacture
741	Refrigeration building
742	Incendiary oil bomb and mustard filling, warehouse, and
	pesticide control shop
742A	Tankhouse for distilled mustard
743	Laboratory, change house, office

Table CS-SP-2. Summary of Geologic and Hydrologic Data. Page 1 of 1.

•

Sampling Location		Denver Surface Elevation* (msl)	Surface Denver Surface Depth to Groundwater Blevation* (msl) Groundwater* (ft) Elevation* (msl)	Groundwater Elevation* (msl)	Invert Depth (ft)	Invert Elevation (ms1)
W2.1	5271	GT 5263	23	5248	7.4	5263.1
W25	5271	GT 5264	24	5247	6.4	5264.3
W27	5272	GT 5265	23	5249	6.5	5265.6
4-3	5273	5252	28	5245	7.9	5265.4
6-1	5272	5254	26	5246	9.6	5263.6
CS01	5267	GT 5263	10	5257	4.0	5263
CS02	5272	GT 5264	10	5262	7.8	5264
CS03	5275	5263	22	5253	11.5	5263

LT - Less than GT - Greater than; sewer invert is below Denver Formation surface * - Values are rounded to the nearest foot

Note: Water levels were measured during drilling. The recorded depths are therefore dependent on field conditions and the amount of time the boreholes were allowed to stand before the water levels were measured.

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northern portion of the South Plants area and in the chlorine plant area. Alluvial thickness and composition may vary in the South Plants area due to manmade disturbances, excavations, and the presence of fill associated with the construction of buildings, roads, and railroads.

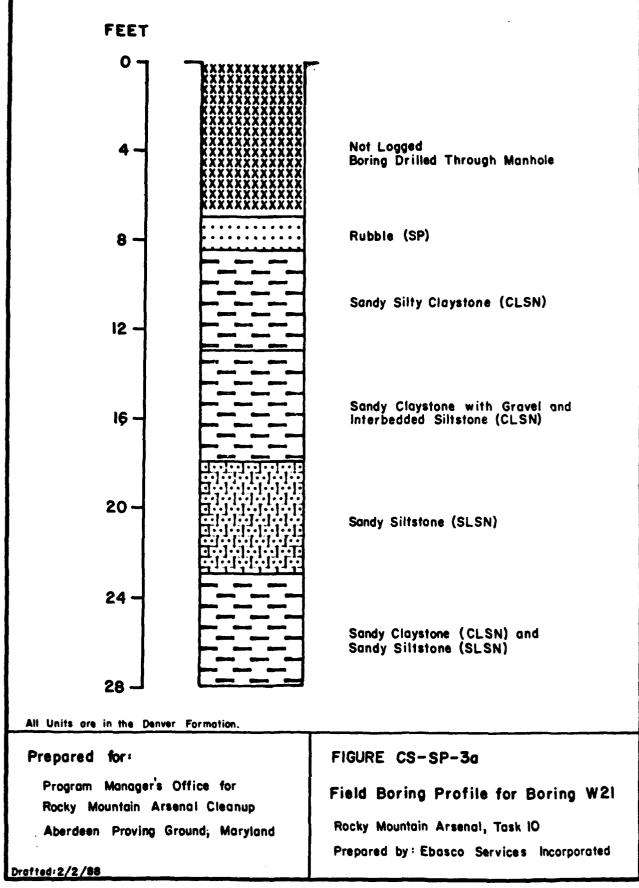
The underlying Denver Formation bedrock is composed of interbedded claystone and sandstone, with lesser lignite. As borings drilled in the South Plants area do not penetrate the Denver Formation completely, the total thickness of the formation in this area is unknown. A detailed description of the Denver Formation is found in a study by May (1982/RIC 82295RO1).

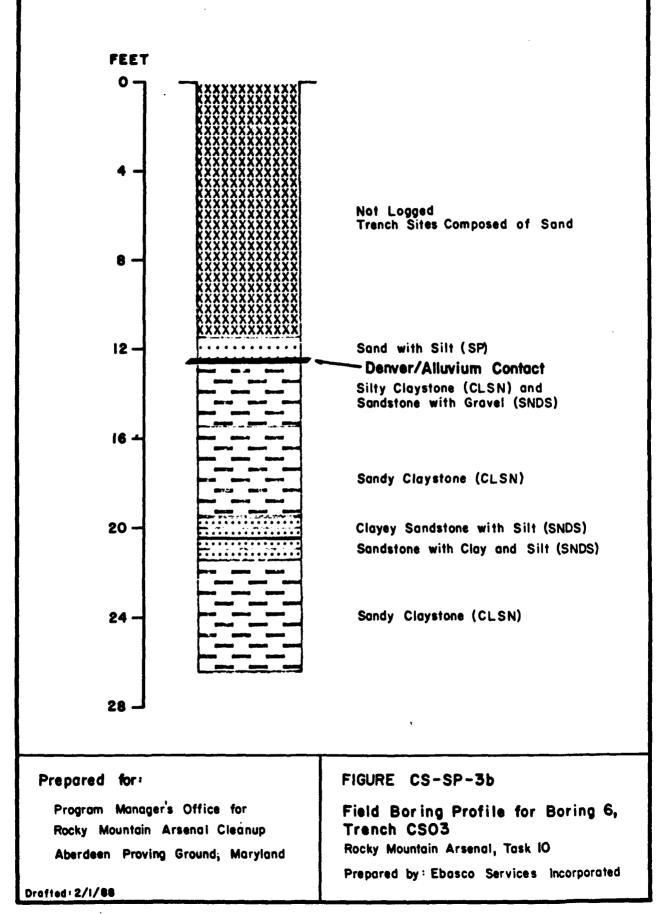
Profiles for the boring drilled through Manhole W21 and Boring 6 in Trench CS03 are shown in Figures CS-SP-3a and b.

1.3 HYDROLOGY

The South Plants manufacturing complex is located on a nearly flat-lying topographic high at an elevation of approximately 5,270 ft above mean sea level (msl). Surface water is primarily controlled by man-made ditches, which generally carry water in four directions (Plate CS-SP-2). Most of the runoff from the South Plants complex in Section 2 and the southwestern portion of the South Plants area in Section 1 flows west and southwest to the Sand Creek Lateral. Water from the northern part of South Plants in Section 1 flows both east and north. Runoff from the southeastern portion of the area flows southeast toward the Derby Lakes.

Surface water quality data from December 1985 are available for several locations in the South Plants area (Plate CS-SP-2). Water draining north into Section 36 contained detectable levels of dicyclopentadiene, methylisobutyl ketone, dibromochloropropane, diisopropylmethyl phosphonate, p-chlorophenylmethyl sulfide, p-chlorophenylmethyl sulfoxide, p-chlorophenylmethyl sulfone, benzene, toluene, ethylbenzene, xylene, chloroform, 1,1-dichloroethane, trans-1,2-dichloroethylene, 1,1,1-trichloroethane, tetrachloroethylene, and chlorobenzene (ESE, 1986a/RIC 86317ROl). Runoff sampled at the western edge of the complex contained





aldrin, isodrin, dieldrin, endrin, chloroform, benzene, and methylisobutyl ketone; and surface water draining toward Lower Derby Lake, sampled at the southeastern corner of South Plants, contained isodrin, dieldrin, chloroform, benzene, and methylisobutyl ketone (Spaine & Gregg, 1983/RIC 83228RO1).

The primary direction of alluvial groundwater flow across RMA is to the northwest; however, a localized groundwater mound diverts flow radially from the South Plants area (Plate CS-SP-3). A previous investigation attributed the presence of the groundwater mound to water leaking from underground pipes into low permeability material (Stollar & Van der Leeden, 1981/RIC 81293R05). However, the presence of the bedrock high of less permiable material in the South Plants area may have contributed naturally to the groundwater mound. The groundwater elevation in the area of the chemical sewer in South Plants as measured in the summer of 1986, ranged from 5,260.9 ft msl in Well 01568, located in the center of the mound, to 5,247.6 ft msl in Well 01008 at the eastern edge of South Plants. Depth to groundwater in these wells was 9.2 and 12.6 ft, respectively (ESE, 1987a). Depth to groundwater observed during the field program is shown in Table CS-SP-2.

A comparison of the groundwater elevations (Plate CS-SP-3) and sewer line elevations (MKE, 1986) indicates that the northern section of the system is at the same elevations as, or below, the current local groundwater level. The area includes Manholes W1, W2, W3, W8, W12, and the E-series manholes north of Manhole E7, excluding E12 and E13.

Groundwater quality data from December 1°85 and January 1986 are available for the area of the chemical sewer in South Plants. Chemical distribution maps for alluvial wells generated by ESE under Task 4 have shown that the following chemicals have been detected in alluvial wells in the vicinity of the South Plants chemical sewer line: dieldrin, p-chlorophenylmethyl sulfoxide, p-chlorophenylmethyl sulfide, 1,4-dithiane, 1,4-oxathiane, 1,1-dichloroethane, 1,1-dichloroethylene, mercury, benzene, trichloroethylene, chloroform, chlorobenzene, trans-1,2-dichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, tetrachloroethylene, arsenic, dibromochloropropane, and dispropylmethyl phosphonate (ESE, 1986a/RIC 86317R01).

1

Because these compounds are representative of the class of chemicals typically found in the groundwater beneath the South Plants manufacturing complex, their presence in the groundwater beneath South Plants does not by itself indicate that the sewer line is contributing to groundwater contamination.

2.0 HISTORY

Information on the history of the area defined as the South Plants chemical sewer was gathered through a search of the Shell I, Shell II, and Juris computer databases. No review of aerial photographs was conducted for the predominantly underground system.

The South Plants manufacturing complex was originally constructed by the Army in 1942 to house operations for the manufacture of military chemicals. In 1949, Julius Hyman and Company leased excess facilities for the production of insecticides (JHC, 1949). In May 1952, Shell Chemical Company (SCC) took over the Hyman leases (CWS, 1952). Shell manufactured herbicides, insecticides, and pesticides until 1982. During the 1950s, Colorado Fuel and Iron also leased facilities in the South Plants area and manufactured chlorobenzene, dichlorodiphenyltrichloroethane (DDT), naphthalene, and chlorine.

Currently, there are no production activities in South Plants. Shell Oil Company still holds leases on a few buildings in South Plants, and the Army operates and maintains a few buildings in South Plants such as the maintenance shops, laundry, firehouse, and laboratory.

Initially the Army built five separate sewer systems for disposal of wastewater generated in the South Plants complex: toxic waste, nontoxic contaminated waste, caustic waste, uncontaminated process wastewater, and sanitary sewage (CWS, 1945a; CWS, 1945b). The process wastewater and sanitary sewage system are addressed in separate contamination assessment reports. The toxic, nontoxic contaminated, and caustic systems have been integrated into one system over the years and are commonly referred to as the chemical sewer or the contaminated waste system. This report will refer to it as the chemical sewer system.

Changes and additions that were made to the chemical sewer system to accommodate changes in plant operations are outlined below. Refer to Plate CS-SP-1 for the location and number of manholes. Manhole numbers appear as designated by the Shell Chemical Company (MKE, 1986), with Army numbers given as appropriate in parentheses (e.g., W27 (14)).

Date

Changes and Additions

1942

The chemical sewer consists of the three separate waste systems: the toxic waste system, the nontoxic contaminated waste system, and the caustic waste system.

The toxic waste lines collected neutralized wastes from the mustard and lewisite production areas. Wastes from mustard production were collected in a 10 inch sewer which emptied into a 30 inch line running north under December 7th Avenue and then into Basin A. Wastes from lewisite manufacture flowed first to the M-1 pits and then to Basin A via the 30 inch line. Wastes from the acetylene plant were pumped to the lime settling basins in the southwest corner of Section 36 (RMA073 F 0432). The toxic waste lines received wastes from the original Army Manholes W12 (1), W15 (2), W16 (3), W21 (4), W22, W25 to W27 (10), W31 (11), and (14) to (17) (CWS, 1945a; 1945b; WR&SK, 1943; MKE, 1986).

The nontoxic waste system, west of "D" Street, originally served as both a conveyance for chemical waste and a storm sewer. The original manholes (designated by the "I" numbering series) in the chlorine plant area were covered with open grates. In addition, the nontoxic contaminated waste system received wastes associated with the phosgene bomb filling activities in Building 331 (MKE, 1986). Originally the nontoxic waste system discharged into the Sand Creek Lateral, which subsequently discharged into First Creek, but it was discovered that salt concentrations were too high for normal dilution by First Creek. The nontoxic

Changes and Additions

1942 (cont.)

waste was diverted into two ponds in the southwestern corner of Section 26, Basins D and E (CWS, 1945a; CWS, 1945b).

The caustic waste line was constructed to carry caustic from the chlorine plant area to a waste basin lined with soils selected from other areas of RMA and considered to be impermeable (noted as the "Dry Reservoir" on Plate CS-SP-1) in the southeastern corner of Section 35 (CWS, 1945a; CWS, 1945b). This sewer line and basin were never used for caustic as all the caustic produced was utilized by the caustic fusion plant (Donnelly, undated). This line included Manholes 1 through 6.

1951

Service to Building 742A was established by the installation of a force main from the building to a manhole south of Building 727 and by a gravity sewer from the unnumbered manhole to Manhole A, east of Building 538 (MKE, 1986).

A chemical sewer drain under Building 742 was installed in conjunction with the installation of the distilled mustard filling line (Donnelly, 1951).

Wastes from Building 532A (the WP filling plant) were diverted from the chemical sewer to the storm sewer. Storm sewers in this area drained to the Sand Creek Lateral which emptied into Basin D (RMA060 F 1933).

1953

A chemical waste sewer line was constructed from Building 732 to Basin A. This line included Manholes A, B, and C (MKE, 1986). This line was never used for contaminated waste (Donnelly, 1960/RMA060, 1932).

Changes and Additions

1953 (cont.) Julius Hyman and Company installed a 12 inch sewer line, which tied into an existing line between Manholes (1B) and (1). Manholes H-1 and H-2 were constructed at this time (JHC, 1953). This line segregated Hyman waste flows from Army waste, and discharged them to a settling basin located at the southeastern corner of the lime settling basins (MKE, 1986).

Cement joints in part of the chemical sewer south and east of the old mustard manufacturing plant (Building 422) were eroded by very acidic wastes coming from Building 412. Wastes were temporarily diverted to an open ditch which flowed to Basin A or Basin D until the damaged pipe could be replaced (RLA002 F 0498; RIA001 F 0594-0595; RLA002 F 1514).

1956

Basin F and chemical sewer mains from the North and South Plants complexes were constructed (Craft, 1982; MKE, 1986). Manholes 4-1, 4-2, and 4-3 were constructed, which linked the chlorine plant contaminated waste system (Manholes I-1 to I-15, except I-10) to the original unused caustic waste line (Manhole 6). The caustic waste line was rerouted to the new chemical sewer at Manhole 1-8 in the southeast corner of Section 35 with the addition of Manholes 3-1 and 3-2 (MKE, 1986).

The chemical sewer main to Basin F, north of December 7th Avenue, was connected to Manholes 1-10 and 2-1 in Section 36.

1957

The Army constructed a 6 inch chemical sewer line and Manholes (21), (22), and (23) to carry waste flows from Buildings 313 and 314 to the main sewer line at Manhole W21 (4) south of Building 517 (DOA, 1957).

1965

Manholes W4A and W5 were installed along with associated pipe near Building 534A (Craft, 1982).

16

Site CS-SP 0070U/0146A Rev. 9/14/88 Date Changes and Additions

1967 Floor drains from the Building 515 extension were installed (Craft, 1982).

A sewer line from a vent gas burner (VGB) in Building 571 to Manhole E14 was installed; Manholes E13 and E14 and the sewer line to Manhole E12 were added at this time (Craft, 1982).

1970 A sewer connection was added from tank T-1337 to Manholes W6 and W5, near Building 534B (Craft, 1982; SCC, 1970a).

The sewer line from the west side of Building 534B to north of 534 tank farm was replaced. Manhole W3 and was installed and the line from W4 to W2 was abandoned (Craft, 1982; SCC, 1970b).

The contaminated sewer lines and manholes on the east side of Buildings 514 and 516 were replaced and rerouted, including installation of Manholes E5, E6, E7 and E8. The sump north of Building 528 was abandoned (Craft, 1982).

1972 Fifty feet of the 4 inch VCP north of Building 534B were replaced (SCC, 1972a; Craft, 1982).

1972-1973 A one-quarter inch stainless steel liner was installed inside the deteriorated sump (above grade) at the northern end of Building 516 (SCC, 1972b).

The line north of December 7th Avenue was replaced, three manholes were installed, and overflow to Basin A was blocked (Craft, 1982).

Changes and Additions

1974

Building 514 was commected to Manhole 11A (not shown on Plate CS-SP-1) with 4 inch cement-lined cast iron pipe (CIP) (Craft, 1982; SCC, 1974a).

Manhole El5 and the drain line to the flare tower were installed (Craft, 1982; SCC, 1974b).

1975

The sewer line from Building 516, extraction area, to the scrubbers southeast of Building 514 was replaced (SCC, 1975a; Craft, 1982).

Manholes (18) and (19) and the sewer line south of Building 471 were replaced. New manholes were W32 and W33, respectively (Craft, 1982; SCC, 1975b).

A drain from the hexane tank to Manhole Wl was installed (Craft, 1982).

A sump east of Building 532, a sewer line, and Manholes W6A, W6B, and W6C were installed (Craft, 1982).

Approximately 1,500 ft of pipe from Manhole 1A-1 (not shown on Plate CS-SP-1) to Basin F were replaced (SCC, 1975c).

1976

The sewer line from the bicycloheptadiene operating area west of Building 561 was installed, and the drain from the tank farm to Manhole E5B was connected (Craft, 1982; SCC, 1976a).

A sump east of the Building 514A tank room was replaced with a new sump and new associated piping (SCC, 1976b; Craft, 1982).

Changes and Additions

1976 (cont.) The line from Manhole E7 to the east meter pit and Manholes E1, E2, E3, E4, E5, E6, and E7 was replaced (Craft, 1982).

Drain lines from Buildings 727 and 729 to new sumps were installed to remove Shell flow from the sewer line used by the Army (Craft, 1982).

The sewer and tank farm for the Denver Effluent Treatment system was installed near Buildings 508, 571, 571A, 571B, and 724 (Craft, 1982).

Drains from the tank farm east of Building 534 were installed (Craft, 1982).

A new concrete sewer line from Building 313 and 314 was constructed west across "D" Street to Manhole 6 where it connected to the original caustic line that discharged to Basin F. Manholes 6-1, 6-2, 6-3, and 6-4 were added in the chlorine plant area along the new line (MKE, 1986).

1978

A new flow metering system and Manholes E4A and E4B were installed southeast of Building 514D (Craft, 1982; SCC, 1978a).

Three sewers were installed from the railroad loading area to the existing sewer line near Manhole El6 (Craft, 1982).

A portion of line between Manholes E5 and E6 was repaired (Craft, 1982).

Six metering stations in Manholes W12, W22 (2 meters), E7 (2 meters), and Ell were installed. Five inlets to Manholes W31 and W27 were plugged (Craft, 1982).

Changes and Additions

1978

(cont.)

The sewer line from Manholes W15 and W14 to W9 was abandoned. A new 4 inch VCP line from Manhole W13 to the line running from the Building 514E sump to Manhole E5A was installed (Craft, 1982).

A new line was installed connecting Manholes W1 and E2 and Manhole EW1 was installed, which connected the east and west branches of the chemical sewer in South Plants (Craft, 1982).

1979

A vent in the sewer line to the air wash in Building 471 was installed (SCC, 1979a).

Sewer lines between the Shell facilities and Basin F were plugged (Craft, 1982).

The sever line from Manhole W32 to W31 was abandoned. Manhole W33 and the line from Building 473 to new Manhole W32 were replaced (SCC, 1979b).

The sewer pipe from Manhole W33 to W32 was slip-lined. Two sump pumps were installed and discharge was piped overhead to the tie-in to the sewer north to Building 451 (Craft, 1982).

The line from Manhole W3 to W4 was plugged (Craft, 1982).

1980

The portion of the existing contaminated sewer used by Shell was replaced with a new overhead chemical waste collection system (Craft, 1982; SCC, 1980).

1982

The chemical sewer main from South Plants to Basin F was removed north of December 7th Avenue, except for a small unused portion of the caustic waste line in Section 35 (Unauthored, 1980/MF RAA016, F 1337).

The chemical sewer is believed to be a major source of groundwater contamination in the South Plants area (MKE, 1986). However, documentation of actual leaks is limited. During the 1950s, acid leaked from the chemical sewer in the vicinity of Building 412 (Meetze 1953; Vess, 1953). A portion of the chemical sewer line north of Building 516 leaked acetic acid, aldrin, caustic soda, dieldrin, endrin, and xylene. A significant sewer leak near Building 314, the laundry, is suspected, because tetrachloroethane, a laundry cleaning agent, was detected in nearby groundwater (SCC, 1979c). Other leaks have been reported to have occurred near Buildings 451 and 514 (SCC, 1979c).

3.0 FIELD INVESTIGATION

3.1 PREVIOUS INVESTIGATIONS

The regional soil type in the vicinity of South Plants is of the Ascalon-Vona-Truckton Association. This association consists of loamy and sandy soils formed in wind laid deposits on uplands that are somewhat excessively drained to well drained (Kolmer & Anderson, 1977/RIC 81295R07).

Soil contamination studies were conducted under Tasks 1 and 14 for the emoved chemical sewer in Sections 26, 35, and 36 as Sites 26-9, 35-2, and 36-20, respectively (ESE, 1987a; ESE, 1987b). Additionally, Shell Chemical Company spills in the South Plants area were investigated under Task 2, Sites 1-13 and 2-18 (Ebasco, 1987a). Two soil investigations were continuing during the writing of this report: Task 24, Army Spills (Ebasco, 1988d), and the South Plants Regional Study (Ebasco, 1988e). These studies are primarily concerned with surface spills.

Over the years, investigations of the chemical sewer system have been made primarily to assess the need for repairs and improvements to the system. Studies were conducted by Parsons and Company in 1955, the U.S. Army Environmental Health Laboratory (USAEHL) in 1960, the U.S. Army Environmental Hygiene Agency (USAEHA) in 1965 and 1984, and Morrison-Knudsen Engineers (MKE) in 1986.

The Parsons study evaluated the volume of waste streams generated by different facilities on RMA. The study was initiated to identify the most economical way to reduce the possibility of groundwater contamination from chemical wastes (Parsons, 1955). At that time approximately 100 gpm of effluent was being discharged into Basin A by Shell Chemical Company in the South Plants area. The effluent was primarily cooling water from shell-and-tube condensers. This water was not circulated through the normal Derby Lake cooling system to ensure that any possible leakage in the condensers would not enter the lakes.

The 1960 report by the USAEHL evaluated the source, volume, and composition of the industrial wastes generated at RMA. At the time of the report, an average of 131 gallons per minute (gpm) were being discharged from the North and South Plants complexes to Basin F, the majority of which originated from the Shell complex. Analyses of the wastewaters indicated a large variance in composition and strength, which was attributed to the batch process nature of the SCC manufacturing methods (USAEHL, 1960).

A similar study was completed by the USAEHA in 1965. During the period February 8 - 21, 1965, the total waste flow into Basin F averaged 267 gpm, 10.5 coming from Army activities (including 3 gpm from North Plants) and the remainder coming from SCC activities (USAEHA, 1965). The flow rate was just over twice that found in the 1960 study. Chemical analyses showed the waste stream was only about one quarter as concentrated as in the 1960 study.

The USAEHA issued a report in 1984 concerning the general condition, problems, and recommendations for the chemical and sanitary collection and treatment systems at RMA. At the time of the study, the only industrial wastes discharged to the chemical sewer were laboratory wastes from Buildings 313 and 743 and the pesticide shop in Building 742. These wastes were collected and transported through force mains to the Building 556 holding tank and then transported to Building 540, where they were treated and discharged to the sanitary sewer. No recommendations were made regarding the condition or use of the chemical sewer or treatment system (USAEHA, 1984/RIC 86213RO2).

Under Phase I of the RMA sewer investigations, Morrison-Knudsen Engineers surveyed the physical configuration of the chemical and sanitary sewers located within the Shell Chemical Company's leasehold in South Plants (MKE, 1986). Pertinent information from the MKE report has been incorporated into this report.

MKE investigated potential contamination from the sewers at RMA prior to the Ebasco studies. As part of their study, MKE took samples from seven trenches along the chemical sewer in the South Plants area and from one trench along an abandoned line in Section 35, south of the "Dry Basin" (Plate CS-SP-1). A schematic drawing showing the sampling grid and the boring identifications used during the drilling program is presented in Figure CS-SP-4. The trench locations are included in Plate CS-SP-1.

Preliminary results from the MKE analyses show elevated levels of process intermediates, solvents, pesticides, halogenated hydrocarbons, arsenic, and mercury. The analytical results are described below briefly and are summarized in Tables CS-SP-3 and CS-SP-4 (HRO, 1987).

Trench MKE 2

Three 1 ft samples were recovered from this trench, one from either side of the exposed pipe and one from underneath the pipe. These samples contained elevated levels of several volatile and semivolatile organic compounds, including chlorobenzene (4.1 and 10 micrograms per gram, ug/g), carbon tetrachloride (16 and 24 ug/g), chloroform (7.4 and greater than 25 ug/g), methylene chloride (9 and 14 ug/g), tetrachloroethylene (5.5 and 7.6 ug/g), and toluene (13 and 29 ug/g) in the volatile fraction. The semivolatile fraction included aldrin (1,300 to 14,000 ug/g), dieldrin (27 ug/g), isodrin (33 and 290 ug/g), and dibromochloropropane (25 and 7,500 ug/g). No analytical data are available for 12 of the 24 semivolatile target compounds. Arsenic and mercury were also detected at 490 and 520 ug/g, and 0.20 and 5.0 ug/g, respectively.

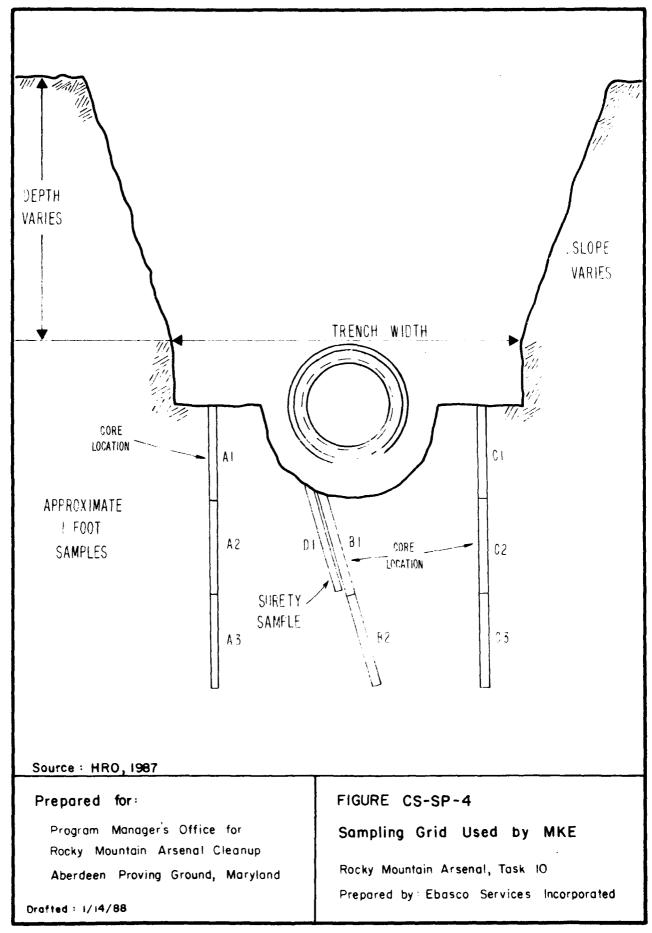


Table CS-SP-3. Results of MKE Sever Investigation: Chemical Sewer - South Plants. Page 1 of 4.

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	Tre	Trench MKB 2**		Tren	Trench MKE 3	Tr.	Trench MKE 4
• (445)	VI	1 0	ប	Al	*	2	1
BOLL CHRISTRY							
Volatiles (ug/g)							
Biggs and a factor of the second	JOE	708	708	BDL	30f	305	10
	9.	24	BDL	BDL	BDL	3.7	300
Chloschesese	17	2	308	BDL	202	Bot	
	7.4	GT 25	BDL	2.0	12	709	100
Diserbol Aiselfide	JQZ	BDL	BDL	30 £	8 Df.	306	
Athereses	BDL	308	BDL	708	BDL		702
Matherlane chloride	308	9.0	14	5.2	5.4	. .	7
mathylane chief the	JOE .	708	308	708	708	100	77
Managara Marca	B D[BDE	BDL	306	3.7	100	S 1
and company	EDT.	308	301,	308	4.0	BOL	£ 1
Tetrachloroethylese	1 S	7.6	BDL	4.6	12	5.1	3
Toluene	13	29	BDľ	3.9	=	702	5
Semivolatiles (ug/g)							
			1300	20.000	20.000	2000	20,000
Aldrin	14,000	12,000	7.	BDT.	100	BOL	708
Dibromochloropropane	706	900/	3 9		901	BDC	709
Dichlorodiphenyltrichloroethane	X i	¥ 4	¥ 6	S S	108	308	308
Dicyclopentadiene	708	706	3,00	202	10	300	306
Dieldrin	700	700			202	206	100
Diisopropylmethylphosphonate	308	100	3 6		708	BOL	<u>1</u>
Endri n	708	700	3 66	300	GT 10	305)Q Q
Isodrin	70.5	2 2	3 9	B D£	S	305	BDL
anodus	¥.	1	ĺ				
Armenic (ug/g)	520	490	BDL	120	200	330	282
Mercury (ud/a)	BOL	5.0	0.20	1.4	1.5	1.4	2.1

BDL - Below detection limit
GT - Greater than
NA - Not analyzed
NR - Not cecorded
NR - Hot recorded

• - Signifies bulk sample due to inability to core sample

• - Results for 12 of the 24 semivolatile analytes were not recorded
Source: HRO, 1987

Table CS-SP-3. Results of MKE Sever Investigation: Chemical Sever - South Plants. Page 2 of 4.

A STATE OF THE STA

,	Tre	Trench NK! 6**				Trench MKB 7**	IRB 7**	
Sample	¥	i	១	Aİ	N2	А3	B 1	28
BOIL CREMISTRY								
Volatiles (ug/g)								
Bicycloheptadiene	BDL	GT 25	BDL	BDL	306	305	305	708
Carbon tetrachloride	BDL	BDL	BDL	708	BDL,	308	300	308
Chlorobensene	305	2.4	BDL	BDC	708	709	708	108
Chloroform	708	12	BDL	BDE	3 0£	BDC	108	10 <u>8</u>
Dimethyl disulfide	BDL	4.8	108	BDL	709	BDL	BOL	702
St hy I bensene	BDE	9.9	BDL	BDL	306	BDt	306	202
Methylene chloride	308	BDL	308	306	708	2.4	3.4	306
Methylisobutyl ketone	305	708	308	30E	306	BDL	108	306
H-xylene	708	306	306	BDL	308	308	<u>10</u>	BOL
o- and p-xylene	302	TQ8	BDL	JOS	208	7 08	708	708
Tetrachloroethylene	6.1	GT 25	4.1	306	306	708	708	308
Toluene	4.0	GT 25	BDL	BDL	108	308	108	709
Semivolatiles (ug/g)								
Aldrin	710	11,000	840	BDL	BDL	BDL	BDL	30
Dibromochloropropane	33	510	19	BDL	BDL	108	708	708
Dichlorodiphenyltrichloroethane	Æ	£	N.	X.	¥	£	Ĕ	Ē
Dicyclopentadiene	BDL	BDL	1.6	BDL	BDL	306	30 2	101
Dieldrin	6.4	140	2.9	308	BD£	BDL	108	702
Diisopropylmethylphosphonate	BDL	BDT	BDI	BDL	BDL	1 0 0	2	3 0 5
Endrin	BDL	11	2.0	3 06	BDC	709	708	70 8
Zeodrin	36	300	27	306	BDL	BDL	108	102
Supone	XX	æ Z	£	£	M.	X	E E	X
Atsenic (ug/g)	470	200	510	18	BDL	708	21	108
Hercury (ug/g)	1.0	3.5	1.3	BDL	108	BDC	700	300

BDL - Below detection limit GT - Greater than NA - Not analyzed NR - Not recorded ** - Results for 12 of the 24 semivolatile analytes were not recorded 8ource: NRO, 1987

Table CS-SP-3. Results of MKE Sever Investigation: Chemical Sever - South Plants. Page 3 of 4.

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,		Trench MKE 7**	•		Trench MKB 19	KR 19	7.	Trench MKB 20
Sample	C1	C2	63	A1	B 1	כז	Z.	•
BOIL CHENISTRY								
Volatiles (ug/g)								
Bicycloheptadien	708	BDL	308	BDL	305	708	JON	102
Carbon tetrachloride	100	BDL	BDL	708	709	108	70 8	108
Chlorobensene	3 0f.	BDL	JQ Q	3 08	BDL	102	TOE	JON
Chloroform	108	BDC	1 0 8	306	306	708	302	708
Dimethyl disulfide	708	BDL	3 0£	308	308	708	708	102
Sthylbenzene	708	708	308	BDL	BDE	BDL	102	308
Methylene chloride	308	2.7	12	2.7	3.2	4 .1	2.9	2.3
Methylisobutyl ketone	BDL	BDL	BDL	BDL	BDL	108	306	ĵg a
M-xylene	708	BDL	BDL	BDC	BDC	306	108	102
o- and p-xylene	BDL	BDL	BDL	BDL	108	BDL	709	308
Tetrachloroethylene	302	BOL	BDL	308	BDL	308	709	702
Toluene	BOL	BDL	305	708	BDL	709	308	102
Semivolatiles (ug/g)								
Aldrin	108	BDL	BDL	BOL	BDL	708	305	304
Dibromochloropropane	BDL	BDL	BDL	708	BDL	BDL	108	308
Dichlorodiphenyltrichloroethane	ž	£	×	308	BDC	BDL	709	308
Dicyclopentadiene	708	BDL	BDL	308	BDL	305	308	102
Dieldrin	BDL	BDL	708	BDL	BDL	305	305	308
Di isopropylmethylphosphonate	BDL	BDL	BDL	308	308	BDL	306	102
Budrin	308	BDL	708	BDL	308	BOL	305	30 E
Isodrin	BDL	BDL	308	BOL	BDL	BOL	70 9	10
Bupona	ž	ž	X.	TQ8	702	BDC	NO.	302
Arsenic (ug/g)	18	BDL	BOL	4.9	11	8.	30£	10 8
Nercury (ug/q)	BDL	708	BDC	2.0	25	4.7	7 08	1.5

NDL - Below detection limit

NA - Not analyzed

NR - Not recorded

- Signifies bulk sample due to inability to core sample

- Results for 12 of the 24 semivolatile analytes were not recorded

Source: NRO, 1987

Table CS-SP-3. Results of MKE Sewer Investigation: Chemical Sewer - South Plants. Page 4 of 4.

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	Trench MRE 20			410	Trench MKB 21		
Bample	ដ	VI	3	A3	.	ฮ	5
BOIL CHHISTHY							
Volatiles (ug/g)							
Bicycloheptadiene	BDL	PDC	BDL	BDL	108	30 0	708
Carbon tetrachloride	708	3 06	709	B D[.	308	3 0 6	306
Chlorobensene	708	BDC	308	BOL	706	305	3 05
Chloroform	BDL	BDL	BOL	108	306	308	708
Dimethyl disulfide	708	BDL	308	BDL	306	BDL	702
Sthylbenzene	708	BDL	BDL	7Q 8	3 0 £	300	305
Methylene chloride	2.4	BDL	308	708	7.6	s	••
Methylisobutyl ketone	BDL	BDL	BDL	BDL	BDL	101	10 8
H-xylene	BDL	BDL	BDL	3 01.	108	BOL	306
o- and p-xylene	708	BDL	308	BDT	3 05	308	308
Tetrachloroethylene	JOS	BDC	BDL	BOL	306	BDL	108
Toluene	BDL	BDL	BDL	NOT.	Jog	BDL	108
Semivolatiles (ug/q)							
Aldrin	BDL	BDC	BDt	108	JQE	BOL	309
Dibromochloropropane	BDL	BDL	BDL	308	3 06	3 0f	30 E
Dichlorodiphenyltrichloroethane	BDL	BDL	BDL	BOL	BDL	10	30 6
Dicyclopentadiene	BDL	BDL	BDL	BOL	305	305	108
Dieldrin	BDL	108	BDC	30 2	102	302	10
Dileopropylmethylphosphonate	BDL	300	Bot	BDL	BOL	BDL	102
Budrin	BDL	BOL	BDL	BDL	BDC	30 F	3 0 6
Isodrin	BDL	708	BDL	108	3 01	102	102
Bupona	JOB	BDL	BDL	708	108	Por	302
Argenic (ug/g)	BOL	BOL	BDL	708	BDL	708	306
Mercury (ug/g)	708	BDL	JOB	JOH	TQE	Jag	300

Table CS-SP-4. Tentative Identification of Nontarget Compounds - MKE Data. Page 1 of 7.

trimethylbenzene 1000 dichloropyridine 410 dichloropyridine 140 trichloromethane 90 tetrachloromethane 91 trichloromethane 92 trichloromethane 93 trichloromethane 94 trichloromethane 95 thorinated organic 96 thorinated hydrocarbon 98 chlorinated hydrocarbon 10.0 hexadecanoic acid 8.8 chlorinated hydrocarbon 10.0 hexadecanoic acid 8.8 (trichloroethylidene)bis 9.6 (trichloroethylidene)bis 9.7 dicyclopentadiene 4.6 dicyclopentadiene 9.7 dicyclopentadiene 9.8 dicyclopentadiene 9.9 dibromochloropropane	Trench	Interval	Unknown ¹ Kunber	Concentration ² ug/g	Best Fit
B1 548 99 trimethylbenzene	7	A1	809	520	dichloropyridine
008 1000 dichloropyridine	8	B1	548	66	trimethylbenzene
140 trichloromethane 180 90 tetrachloromethane 180 37 G3 subsittued aliphatic 128 120 G7 aliphatic 128 120 G7 aliphatic 128 2.3 hexachlorobutadiene 585 2.0 chlorinated organic 587 4.2 pentachloroethane 592 4.3 octachloroethane 592 4.3 octachloroethane 592 608 8.8 chlorinated hydrocarbon 642 10.0 hexadecanoic acid 653 8.8 (trichloroethylidene)bis 659 9.6 (trichloroethylidene)bis 659 9.6 (trichloroethylidene)bis 659 9.6 (trichloroethylidene)bis 659 9.6 (trichloroethylidene)bis 650			608 612	1000 410	dichloropyridine dichloropyridine
180 90 tetrachloromethane			190	140	trichloromethane
180 37 C3 substitued aliphatic 128 120 C7 aliphatic 128 120 C7 aliphatic 585 2.0 chlorinated organic 587 4.2 pentachloroethane 592 4.3 octachloro cyclopentene 601 5.0 chlorinated hydrocarbon 642 608 8.8 chlorinated hydrocarbon 653 8.8 chlorinated hydrocarbon 659 659 659 659 659 659 659 659 659 659 659 659 659 659 659 659 659 659 650 6			080	06	tetrachloromethene
128 120 C7 aliphatic			180	37	C3 subsititued aliphatic
C1 565 2.3 hexachlorobutadiene			128	120	G7 aliphatic
585 2.0 chlorinated organic 587 4.2 pentachloroethane 592 4.3 octachloro cyclopentene 601 5.0 chlorinated hydrocarbon 608 8.8 chlorinated hydrocarbon 642 10.0 hexadecanoic acid 653 8.8 (trichloroethylidene)bis 659 9.6 (trichloroethylidene)bis 682 39.0 chlorinated hydrocarbon 103 2.1 Butanoic acid, methyl est 136 benzene, ethyl methyl VOA 4.6 dicyclopentadiene VOA 4.6 dibromochloroputagiene VOA 50 dibromochloropupagene	7	ប	565	2.3	hexachlorobutadiene
587 4.2 pentachloroethane 592 4.3 octachloro cyclopentene 601 8.8 chlorinated hydrocarbon 613 4.5 chlorinated hydrocarbon 642 10.0 hexadecanoic acid 653 8.8 (trichloroethylidene)bis 659 9.6 (trichloroethylidene)bis 682 39.0 chlorinated hydrocarbon 103 2.1 Butanoic acid, methyl est 136 180 benzene, ethyl methyl 756 84 hexachlorobutadiene 70A 4.6 dicyclopentadiene 70A 6 dibromochloropropane			585	2.0	chlorinated organic
601 608 8.8 chlorinated hydrocarbon 608 8.8 chlorinated hydrocarbon 642 653 8.8 (trichloroethylidene)bis 659 9.6 (trichloroethylidene)bis 682 39.0 chlorinated hydrocarbon 103 2.1 Butanoic acid, methyl est 136 136 4.6 dicyclopentadiene VOA 50 dibromochloropropane			587	4.2	pentachloroethane
601 5.0 chlorinated hydrocarbon 608 6.8 chlorinated hydrocarbon 613 4.5 chlorinated hydrocarbon 642 10.0 hexadecanoic acid 659 8.8 (trichloroethylidene)bis 682 39.0 chlorinated hydrocarbon 103 2.1 Butanoic acid, methyl 136 180 benzene, ethyl methyl 136 4.6 dicyclopentadiene VOA 4.6 dicyclopentadiene VOA 50 dibromochloropropane			592	4.3	octachloro cyclopentene
608 8.8 chlorinated hydrocarbon 613 4.5 chlorinated hydrocarbon 642 10.0 hexadecanoic acid 653 8.8 (trichloroethylidene)bis 682 39.0 chlorinated hydrocarbon 103 2.1 Butanoic acid, methyl est 136 180 benzene, ethyl methyl 136 4.6 dicyclopentadiene 137 4.6 dicyclopentadiene 138 dibromochloropropane			601	5.0	chlorinated hydrocarbon
613 4.5 chlorinated hydrocarbon 642 10.0 hexadecanoic acid 653 8.8 (trichloroethylidene)bis 682 39.0 (trichloroethylidene)bis 682 39.0 chlorinated hydrocarbon 103 2.1 Butanoic acid, methyl 136 180 benzene, ethyl methyl 136 4.6 dicyclopentadiene 137 4.5 dibromochloropropane		,	809	8.8	chlorinated hydrocarbon
642 10.0 hexadecanoic acid 653 8.8 (trichloroethylidene)bis 659 9.6 (trichloroethylidene)bis 682 39.0 chlorinated hydrocarbon 103 2.1 Butanoic acid, methyl est 136 180 benzene, ethyl methyl 136 84 hexachlorobutadiene 136 4.6 dicyclopentadiene 137 4.6 dibromochloropropane			613	4.5	chlorinated hydrocarbon
653 8.8 (trichloroethylidene)bis 659 9.6 (trichloroethylidene)bis 682 39.0 chlorinated hydrocarbon 103 2.1 Butanoic acid, methyl est 136 180 benzene, ethyl methyl VOA 4.6 dicyclopentadiene VOA 50 dibromochloropropane			642	10.0	hexadecanoic acid
659 9.6 (trichloroethylidene)bis 682 39.0 chlorinated hydrocarbon 103 2.1 Butanoic acid, methyl est 136 180 benzene, ethyl methyl 136 84 hexachlorobutadiene 136 4.6 dicyclopentadiene 136 50 dibromochloropane			653	8.8	(trichloroethylidene)bis chlorobenzene
682 39.0 chlorinated hydrocarbo 103 2.1 Butanoic acid, methyl 136 180 benzene, ethyl methyl 14.6 hexachlorobutadiene 15.0 voa 4.6 dicyclopentadiene 15.0 dibromochloropopane			629	9.6	(trichloroethylidene)bis chlorobenzene
103 2.1 Butanoic acid, methyl 136 180 benzene, ethyl methyl 180 benzen			682	39.0	chlorinated hydrocarbon
136 180 A1 566 84 VOA 4.6			103	2.1	Butanoic acid, methyl ester
A1 566 84 VOA 4.6 VOA 50			136	180	benzene, ethyl methyl
50	m	A1	266	84	hexachlorobutadiene
20			VOA	4.6	dicyclopentadiene
4,4			VOA	20	dibromochloropropane
210			174	210	hexachlorobutadiene

 ^{1 -} No unknown numbers are given for target compounds detected by volatile organic analysis (VOA)
 2 - Goncentrations are order-of-magnitude approximations
 Source: HRO, 1987

Table CS-SP-4. Tentative Identification of Nontarget Compounds - NKE Data. Page 2 of 7.

170 170 120 2.5 460 4.9 130 46 5.4 230 46 5.4 230 310 310 1.3 1.3 2.0 6.9 1.8 2.5 4.7			To be a second	2	
B* 566 170 678 120 105 2.5 174 460 A* 098 4.9 VOA 130 VOA 130 VOA 46 154 5.4 175 23 VOA 830 175 310 175 310 574 0.9 574 0.9 574 0.9 583 1.3 588 2.0 601 6.9 602 6.9 614 2.5 626 4.7 103 1.5	Trench	Interval	Number	concentration= ug/g	Best Fit
678 120 105 2.5 174 460 2.5 VOA 46 154 5.4 175 230 46 1154 5.4 175 230 175 310 A1 566 1.8 576 1.8 583 1.3 583 1.3 584 6.9 601 609 614 2.5 614 2.5 601 609 1.8	m	ž	566	170	hexachlorbutadiene
105 174 460 460 VOA VOA 130 VOA 154 154 155 175 175 175 18 A1 566 1.8 574 0.9 576 1.5 583 1.3 588 601 609 601 609 601 609 601 609 601 609 6067 1.5			678	120	chlorinated hydrocarbon
A* 098 4.9 VOA 130 VOA 46 154 5.4 175 230 B* 104 23 VOA 830 175 310 A1 566 1.8 574 0.9 576 0.9 583 1.3 588 2.0 609 614 2.5 614 2.5 626 44.7 1.5			105	2.5	hexane
A* 098 4.9 VOA 46 VOA 46 154 5.4 175 23 B* 104 23 VOA 830 175 310 A1 566 0.9 574 0.9 575 1.5 583 2.0 609 1.8 609 1.8 614 2.5 626 4.7 067 1.4 103 1.5				4	hexachlorobutadiene
VOA 46 VOA 46 154 5.4 175 230 830 23 VOA 830 175 310 175 310 574 0.9 575 1.3 583 2.0 601 609 604 6.9 607 1.8 614 2.5 626 4.7 667 1.4 103 1.5	4	¥¥	860	6.4	1-methylcyclopentadiene
VOA 46 154 5.4 175 230 176 23 WOA 830 175 310 175 310 A1 566 0.9 576 0.9 576 1.3 583 2.0 601 609 1.8 614 2.5 626 4.7 067 1.4			VOA	130	dicyclopentadiene
154 5.4 175 230 176 23 Work 830 175 310 175 310 A1 566 0.9 576 0.9 576 1.3 583 2.0 601 6.9 601 6.9 614 2.5 626 4.7 067 1.4			VOA	46	dibromochloropropane
B* 104 23 V0A 830 175 310 A1 566 1.8 574 0.9 576 1.3 583 2.0 601 6.9 601 6.9 614 2.5 626 4.7 067 1.4			154	5.4	3,4-diethenyl-cyclohexene
A1 566 1.8 574 0.9 576 1.8 583 1.3 588 2.0 601 609 1.8 614 2.5 626 4.7 607 1.5			175	230	hexachlorobutadiene
VOA 830 175 310 574 0.9 575 0.9 583 1.3 588 2.0 601 6.9 602 1.8 614 2.5 626 4.7 103 1.5	•	æ æ	104	23	hexane
A1 566 1.8 5.74 0.9 5.74 0.9 5.76 1.5 5.8 5.20 6.9 6.9 6.9 6.9 6.9 6.9 6.9 6.9 6.9 6.9			VOV	830	dibromochloropropane
A1 566 1.8 574 0.9 576 1.5 583 1.3 588 2.0 601 6.9 609 1.8 614 2.5 626 4.7 067 1.4			175	310	hexachlorobutadiene
0.9 1.5 2.1 6.0 9.0 1.5 4.1 1.5	•	V 1	566	1.8	hexachlorobutadiene
1.5 2.0 2.0 3.4 4.1 5.4			574	6.0	methylbenzenedithiol
1.3 2.0 2.9 1.4 1.5 5.4			576	1.5	hydrocarbon
2.0 6.9 1.8 1.4 1.5			583	1.3	hydrocarbon
6.9 8.1.4 8.1.4 8.1.4 8.1.4 8.1.4			588	2.0	diethyl-bi-dioxaborolane dione
1.8 2.5 4.1 5.1			601	6.9	chlordene
2.5 1.4 1.5			609	1.8	dichlorpyridine
1.4			614	2.5	phthalate
1.4			626	4.7	molecular sulfur
1.5			290	1.4	trichloromethane
			103	1.5	butanoic acid, methyl ester

1 - No unknown numbers are given for target compounds detected by volatile organic analysis (VOA)
 2 - Concentrations are order-of-magnitude approximations
 * - Signifies bulk sample due to inability to core sample
 Source: HRO, 1987

Table CS-SP-4. Tentative Identification of Montarget Compounds - MCE Data. Page 3 of 7.

Unknown! Concentration ² Number ug/g Best Fit	549 270 trimethylbenzene 566 30 hexachlorobutadiene 601 95 chlordene 609 150 dichloropyridine 613 72 dichloropyridine 672 51 pteridinone 150 CK-CR alicharic	10 10 2.4 6.4	103 1.0 butanoic acid, methyl ester 613 1.8 phthalate 628 36 unknown alcohol 7.4 butanoic acid, methyl ester (possibly with a coeluter)	570 0.7 hexadecanoic acid 578 3.6 phthalate 612 0.9 adipate ester
Unknov Interval Numb	B1 549 566 601 609 613	C1 566 601 605 605 626	A1 103 A2 613 628 103	A3 570 578 612 612
Trench	vo	vo	r	7

1 - No unknown numbers are given for target compounds detected by volatile organic analysis (VOA)
 2 - Concentrations are order-of-magnitude approximations
 Source: HRO, 1987

Table CS-SP-4. Tentative Identification of Nontarget Compounds - MKE Data. Page 4 of 7.

Best Fit	phthalate alcohol adipate ester phthalate phthalate phthalate	phthalate butanoic acid, methyl ester	phthalate substituted alkene adipate ester phthalate substituted alkene butanoic acid, methyl ester	hydrocarbon phthalate alcohol substituted alkene adipate ester phthalate phthalate phthalate butanoic acid, methyl ester
Goncentration ² ug/g	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 L S	∞ <i>o</i> . <i>v</i> . o. 4. o. ∞ v. v.	27.7.2 5.7.1 1.1 0.3 0.3
Unknown ¹ Number	613 627 660 665 674 674	613 103	570 580 612 613 642 103	540 579 580 612 618 628 103
Interval	18	B 2	62	ຮ
Trench	•	7	r r	_

1 - No unknown numbers are given for target compounds detected by volatile organic analysis (VOA)
 2 - Concentrations are order-of-magnitude approximations
 Source: HRO, 1987

Table CS-SP-4. Tentative Identification of Nontarget Compounds - MKE Data. Page 5 of 7.

Best Fit	phthalate ester oxygen substituted alkene oxygen substituted alkene hexadecanoic acid ester C6-C7 aliphatic	phthalate ester oxygen substituted alkene G6 aliphatic	alkane phthalate ester oxygen substituted alkene C6 aliphatic	phthalate ester oxygen substituted alkene oxygen substituted alkene C6 aliphatic	trichlorbenzamine oxygen substituted alkene sulfur phthalate ester C6 aliphatic
Concentration ² ug/g	2.9 14 2.3 0.7	1.6 18 0.6	0.6 0.9 25 0.7	2.4 19 3.1 0.9	12. 12. 2.7 0.5
Unknown ¹ Number	612 622 622 662 104	612 622 104	605 612 622 104	612 622 622 104	578 621 622 671 104
Interval	1	81	15	V 2	* Å
Trench	19	19	19	20	20

No unknown numbers are given for target compounds detected by volatile organic analysis (VOA)
 Concentrations are order-of-magnitude approximations
 Signifies bulk sample due to inability to core sample
 Source: HRO, 1987

Table CS-SP-4. Tentative Identification of Montarget Compounds - MKE Data. Page 6 of 7.

Best Fit	trichlorobenzamine oxygen substituted alkene phthalate ester C6 aliphatic	methylcyclohexane methyl benzene phthalate ester oxygen substituted alkene oxygen substituted alkene C5-C6 aliphatic	alkene phthalate ester oxygen substituted alkene hexadecanoic acid, ester C6 aliphatic phthalate ester	phthalate ester oxygen substituted alkene hexadecanoic acid, ester C6-C7 aliphatic
Concentration ² ug/g	0.7 18 1 0.6	0.2 0.2 0.5 1 0.5	2.5 1.9 0.3 0.7	1.9 9 0.3 0.7
Unknown ¹ Number	578 622 671 104	520 525 612 622 622 105	622 612 622 662 105	612 622 662 105
Interval	క	A1	. V 3	A 3
Trench	50	21	21	21

1 - No unknown numbers are given for target compounds detected by volatile organic analysis (VOA)
 2 - Concentrations are order-of-magnitude approximations
 * - Signifies bulk sample due to inability to core sample
 Source: HRO, 1987

Table CS-SP-4. Tentative Identification of Nontarget Compounds - MKE Data. Page 7 of 7.

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	alkene ester	alkene alkene	alkene
Best Fit	phthalate ester oxygen substituted alkene alkene hexadecanoic acid, ester C6 aliphatic	alkane phthalate ester oxygen substituted alkene oxygen substituted alkene C6-C7 aliphatic	oxygen substituted alkene C6 aliphatic
Concentration ² ug/g	3.3 2.7. 0.6	0.3 0.6 1.6 1.2	9,3 1,8
Unknown ¹ Number	612 622 622 662 104	605 612 622 104	621 104
Interval	B 1	ថ	C 2
Trench	21	21	21

1 - No unknown numbers are given for target compounds detected by volatile organic analysis (VOA)
 2 - Concentrations are order-of-magnitude approximations
 Source: HRO, 1987

Several nontarget compounds were tentatively identified as hydrocarbons and halogenated hydrocarbons. The sample from directly beneath the pipe contained these compounds in the highest concentrations. The most notable compounds were those tentatively identified as trimethyl benzene (99 ug/g, equivalent to parts per million, ppm), dichloropyridine (1,000 ug/g), trichloromethane (140 ug/g), and an aliphatic with seven carbons (120 ug/g). The other two samples also contained compounds tentatively identified as ethylmethyl benzene (180 ug/g), dichloropyridine (520 ug/g), and several halogenated hydrocarbons at lower concentrations (39 ug/g or less).

Trench MKE 3

Two samples were collected from this trench. Chloroform, methylene chloride, tetrachloroethylene, and toluene were found in both samples at concentrations ranging from 2 to 12 ug/g. Boring 3 also contained m-xylene and o- or p-xylene at 3.7 and 4.0 ug/g, respectively.

Semivolatile analyses showed elevated levels of several compounds, most notably aldrin, which was present in both samples at 20,000 ug/g. Other semivolatile compounds detected were dieldrin (200 and greater than 10 ug/g), isodrin (300 and greater than 10 ug/g), dibromochloropropane (100 ug/g), dichlorodiphenyltrichloroethane (30 and 100 ug/g), and supona (50 ug/g). Arsenic was found at 120 and 200 ug/g, and mercury was found at 1.4 and 1.5 ug/g.

The primary nontarget compound noted in these samples was tentatively identified as hexachlorobutadiene. It appeared in both samples at concentrations ranging from 84 to 460 ug/g. Two other nontarget compounds of interest were tentatively identified as dibromochloropropane (50 ug/g) and a chlorinated hydrocarbon (120 ug/g).

Trench MKE 4

Two samples were collected from this trench; one from beside the pipe and one from underneath the pipe. In general, the sample from under the pipe contained more target compounds at much higher concentrations than the sample

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from beside the pipe. These compounds included carbon tetrachloride (3.7 and 300 ug/g), chloroform (100 ug/g), methylene chloride (5.6 and 5.4 ug/g), tetrachloroethylene (5.1 and 60 ug/g), toluene (greater than 25 ug/g), m-xylene (15 ug/g), o- and p-xylene (13 ug/g), and methylisobutyl ketone (21 ug/g). The semivolatile fraction contained aldrin both beside the pipe and under the pipe at 2,000 and 20,000 ug/g, respectively. Arsenic was found at 330 and 290 ug/g, and mercury was found at 1.4 and 2.1 ug/g.

Nontarget compounds detected at the highest concentrations in these samples included those tentatively identified as dibromochloropropane (46 and 830 ug/g), hexachlorobutadiene (230 and 310 ug/g), and dicyclopentadiene (130 ug/g).

Trench MKE 6

Three samples were collected from Trench MKE 6, two from beside the pipe and one from underneath the pipe. Most of the volatile compounds detected were in the sample directly under the pipe. These compounds included chlorobenzene (2.4 ug/g), chloroform (12 ug/g), bicycloheptadiene (greater than 25 ug/g), ethylbenzene (6.6 ug/g), tetrachloroethylene (6.1, greater than 25, and 4.1 ug/g), toluene (4.0 and greater than 25 ug/g), and dimethyl disulfide (4.8 ug/g). The semivolatile fraction contained pesticides and halogenated hydrocarbons, such as aldrin (710, 11,000, and 840 ug/g), endrin (11 and 2.0 ug/g), dieldrin (6.4, 140, and 2.9 ug/g), isodrin (26, 300, and 27 ug/g), dicyclopentadiene (1.6 ug/g), and dibromochloropropane (33, 510, and 19 ug/g). Arsenic was also found at concentrations ranging from 470 to 510 ug/g, and mercury was found at levels ranging from 1.0 to 3.5 ug/g.

Nontarget compounds were more concentrated in the sample taken from beneath the pipe. Compounds of note in this sample included those tentatively identified as trimethyl benzene (270 ug/g), chlordene (95 ug/g), dichloropyridine (72 and 150 ug/g), and an aliphatic with 6 to 8 carbons (210 ug/g). The samples taken from beside the pipe contained similar compounds, although at much lower concentrations.

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Trench MKE 7

Trench MKE 7 yielded eight samples. Methylene chloride was detected in four of the samples in concentrations ranging from 2.4 to 12 ug/g. No semivolatile organic compounds were detected in any of the samples analyzed for semivolatile organics, nor was mercury. Arsenic was found in three of the samples, and ranged in concentration from 18 to 21 ug/g.

Analyses of the samples also showed the presence of several nontarget compounds, including those tentatively identified as phthalates, alcohols, acids, esters, and three instances of a substituted alkene. The phthalates are plasticizers, which are ubiquitous and which were present in low concentrations, the maximum being 8.9 ug/g. Alcohols, esters, and hexadecanoic acid are often associated with naturally occurring compounds and were present in concentrations of up to 36 ug/g. The three substituted alkenes were present in concentrations of 9.8, 0.5, and 5.1 ug/g.

Trench MKE 19

Three samples were collected from Trench MKE 19. Methylene chloride was detected in all three of the samples at concentrations ranging from 2.7 to 4.1 ug/g. No semivolatile organic compounds were detected. Arsenic was found at 6.4, 11, and 6.8 ug/g, and mercury was found at 2.0, 25, and 4.7 ug/g. The highest concentrations of both arsenic and mercury occurred in the sample from directly under the pipe.

The primary nontarget compound was tentatively identified as an oxygensubstituted alkene and was present at 2.3, 14, 18, and 25 ug/g.

Trench MKE 20

Three samples were taken from this trench. Volatile organic analysis showed methylene chloride in all three samples at concentrations ranging from 2.3 to 2.9 ug/g. No semivolatile compounds were detected, nor was arsenic. Mercury was detected in the sample from beneath the pipe at a concentration of 1.5 ug/g.

The primary nontarget compound was found in all three samples and was tentatively identified as an oxygen-substituted alkene. This compound was present at 3.1, 19, 12, and 18 ug/g.

Trench MKE 21

Trench MKE 21 yielded six samples from three borings. Three of these samples contained methylene chloride at concentrations of 2.6, 5.0, and 8.0 ug/g. No semivolatile organic compounds, arsenic, or mercury was detected.

Of the several nontarget compounds detected in these samples, a tentatively identified oxygen-substituted alkene was present in the highest concentrations (1 to 13 ug/g).

Methylene chloride occurs frequently in the results from the MKE field program, usually at concentrations of less than 10 ug/g. This compound is a common laboratory solvent, and its fairly constant concentration in the analytical results may be evidence of laboratory background contamination.

During the sampling program, MKE also took samples from trenches and manholes being investigated by Ebasco. Chemical analyses of these samples showed elevated levels of pesticides, intermediates and metals. The analytical results are described below and are summarized in Table CS-SP-5 (HRO, 1988).

Manhole W21

Three samples were collected from soil underneath Manhole W21 at depths of 8.5 ft, 10.5 ft, and 15.5 ft. The 8.5 ft sample was only analyzed for ICP metals and was reported to contain lead within it's indicator range at 29 ppm. Chromium, copper, and zinc were all present above their indicator ranges at concentrations of 51 ppm, 37 ppm, and 120 ppm, respectively. The 10.5 ft interval contained arsenic above its indicator range at a concentration of 430 ppm and the 15.5 ft interval contained arsenic within its indicator range at 3 ppm. Arsenic was the only analyte reported for both of these samples.

Table CS-SP-5. Results of MKE Samples from Ebasco Sampling Locations. Page 1 of 2.

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•		Manhole W21			Manhole W25	
Sample Depth	8.5 ft	10.5 ft	15.5 ft	7.4 ft	10.0 ft	14.5 ft
SOIL CHEMISTRY						
Volatiles (ug/g)	Ĕ	æ	X X			
Bicycloheptadiene				*JQS	1.9*	BDL.*
Carbon tetrachloride				3.6*	3.70	*70 8
Chlo-oform Meth/lene chloride				7.6	3.7	-108
H-xylene				₽DT.	5.4*	*10 8
Tetrachloroethylene Toluene				BDL*	3.1• 8.0•	BDL*
Semivolatiles (ug/g)	Œ	Æ	MR			
Aldrin				7000	730	340
Dibromochloropropene				0009	490	BDL
Dichlorodiphenylethane (DDE)				BDL	1.1	308
Dichlorodiphenyltrichloroethane (DDT)	(DDT)			70	20	9
Dieldrin				90	7.6	3.2
Hexachlorocyclopentadiene				09	52	JOE :
Isodrin				200	23	
				3	•	
ICP Metalw (ug/g)		X.	W.	-		
Cadmium	30			301	BDL	708
Chronium	51			BDL	BDL	4.2
Copper	37			41	32	9
Lead	29			28	76	32
sinc	120			33	100	100
Arsenic (ug/q)	Ĕ	430	E	X X	n	BOL
Mercury (ug/g)	ž	ž	E N	E.	0.14	BDL

BDL - Below detection limit NR - Not recorded * - Past holding times

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Table CS-SP-5. Results of MKE Samples from Ebasco Sampling Locations. Page 2 of 2.

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		Manhole W27	27		Manhole 4-3	4-3	french CS01	C\$01
Sample Depth	7.0 ft	8.5 ft	9.2 ft	14.0 ft	3.7 ft	11.5 ft	4.1 ft	4.0 ft
BOIL CHENISTRY								
Volatiles (ug/g)	Ĕ	X X	Ĕ	XX.				
Micycloheotadiese					BDE.	BDL*	708	300
Carbon tetrachloride					BDL*	₽ DГ•	708	305
Chloroform					BDL.*	*70 8	308	J OE
Methylene chloride					₽DГ.	BDL.	BDC	108
N-xylene					BDL*	BDL*	302	100
Tetrachloroethylene					PDT.	BDC.		
Toluene					BDL•	*108	708	100
Semivolatiles (ug/g)	Ē	¥	XX	XX.				
A14rta					1.0	BDL	708	1.63
Dibroschloroprosse					BDL	BDL	JON	3 00
Dichlorodiphenylethane (DDE)					JOR	BDL	Bot	30 £
Dichlorodiphenyltrichloroethane (DDT)	(DDT)				BDL	BDL	308	10 8
Dieldrin					BDL	BDL	3.96	7.56
Hexach lorocyclopentadiene					BDL	BDL	10	305
Inodrin					BDL	BDE	708	208
Supons					BDL	BDL	X.	Ĕ
ICP Metals (ug/g)		X.	Æ	X X	Ĕ			
	702					306	708	702
Chronium	12					12	6.71	10.1
Concer	43					15	31.7	36.2
	49					17	29.4	52.3
sinc	140					26	208	1100
Arsenic (ug/g)	X	300	708	BDL	X.	2.6	11.1	4.31
(m/m/ Almoral	Z	£	£	×	X.	BDL	0.58	1.03
- F. C.	!							

BDL - Below detection limit NR - Not recorded * - Past holding times

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Manhole W25

Three samples were collected from beneath Manhole W25. The holding times for the volatile analyses were exceeded in all three samples. Although results were reported, values may be lower than they would have been if the samples had been analyzed within the recommended holding time. Volatile analyses showed the presence of seven compounds in the 7.4 ft and 10.0 ft intervals. These were carbon tetrachloride (3.6 and 3.7 ug/g), chloroform (100 and 8.9 ug/g), bicycloheptadiene (1.9 ug/g), methylene chloride (7.6 and 3.7 ug/g), tetrachloroethylene (3.1 ug/g), toluene (4.3 and 8.0 ug/g), and m-xylene (5.4 ug/g). No volatile organic compounds were found in the 14.5 ft sample.

Eight semivolatile organic compounds were found in these borings, and were identified as aldrin (7000, 730, and 340 ug/g), dieldrin (90, 7.6, and 3.2 ug/g), isodrin (200, 23, and 11 ug/g), dibromochloropropane (6000 and 490 ug/g), dichlorodiphenylethane (DDE) (1.1 ug/g), dichlorodiphenyl-trichloroethane (DDT) (70, 20, and 10 ug/g), hexachlorocyclopentadiene (60 and 25 ug/g), and supona (1.3 ug/g).

of the metals, arsenic was detected once above its indicator range at 11 ug/g in the 10.0 ft interval. Mercury was also detected once above its indicator range at 0.14 ug/g, also in the 10.0 ft interval. ICP metals were found in all three samples from this manhole. Cadmium was detected above its indicator range at 4.2 ug/g in the 14.5 ft interval. Copper was found within its indicator range at 32 ug/g in the 10.0 ft interval and above its indicator range at 41 and 40 ug/g in the 7.4 ft and 14.5 ft intervals, respectively. Lead was found within its indicator range in all three samples at concentrations of 28, 26, and 32 ug/g. Zinc was found above its indicator range in all three samples at concentrations of 93, 100, and 100 ug/g.

Manhole W27

Four samples were collected from beneath Manhole W27. Only analyses for the ICP metals were reported for the 7.0 ft sample. Copper, lead and zinc were all found above their indicator ranges at concentrations of 43, 49, and 140 ug/g, respectively.

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Results for the arsenic analysis were the only values reported for the remaining three intervals, 8.5 ft, 9.2 ft, and 14.0 ft. Arsenic was below the certified reporting limit in all three samples.

Manhole 4-3

Two samples were collected from beneath Manhole 4-3 at depths of 3.7 ft and 11.5 ft. No volatile organic compounds were found in either sample, although the holding time for both samples was exceeded at the laboratory. The analysis for semivolatile organic compounds showed aldrin at 1.0 ug/g in the 3.7 ft interval.

No metals were reported for the 3.7 ft interval. Arsenic was detected within its indicator range at a concentration of 2.6 ug/g in the 11.5 ft interval.

Trench CS01

Two samples were collected from beneath pipe joints in this trench, one at 4.1 ft and one at 4.0 ft. No volatile organic compounds were found in either sample. Semivolatile compounds found include aldrin at 1.63 ug/g in the 4.0 ft sample and dieldrin at 3.96 ug/g in the 4.1 ft interval and 7.56 ug/g in the 4.0 ft interval.

Mercury was found above its indicator range in both samples at 0.58 ug/g (4.1 ft interval) and 1.03 ug/g (4.0 ft interval). Arsenic was found above its indicator range at 11.1 ug/g (4.0 ft interval). Copper and lead were detected within their indicator ranges in the 4.1 ft interval at concentrations of 31.7 ug/g and 29.4 ug/g, respectively. Zinc was found above its indicator range in this interval at a concentration of 508 ug/g. Copper, lead, and zinc were all detected above their indicator ranges in the 4.0 ft interval at concentrations of 36.2 ug/g, 52.3 ug/g, and 1100 ug/g, respectively.

3.2 FIELD SURVEY

3.2.1 Field Program

Using the methodology presented in the Task 10 Technical Plan (Ebasco, 1987b/RIC 87336R30), 14 manholes were inspected and soil samples were collected from beneath five manholes and from three sewer line trenches.

Samples were also collected from eight trenches excavated by Morrison-Knudson Engineers. These investigations yielded 87 samples for chemical analysis and 16 samples for physical analysis. Pressure lines were not hydrostatically tested at the request of the Facilities Engineer. Plate CS-SP-1 shows the locations of manholes and trenches investigated as part of this study.

No borehole clearance for safety purposes was conducted along the sewer line, as there was no likelihood of unexploded ordnance, buried metals, or other buried objects.

Manholes were inspected to determine the condition of the corbels, rims, walls, aprons, and channels and to verify the positions and alignments of lines. Several of the manholes inspected were in poor condition, with damage that included deteriorated aprons and channels, gaps at inlet and outlet connections, and cracked or missing bricks and mortar in the corbels. Table CS-SP-6 is a summary of the observations.

In addition to the manholes in the South Plants area, a manhole was located in the southwestern corner of Section 36. The manhole is of brick and mortar construction and is labeled with a yellow No. 1. It was found south of the southwestern corner of the lime settling basins (Plate CS-SP-1). A line exits this manhole and heads northeast to a concrete ditch where it emerges immediately south of pit No. 2. This manhole appears to be part of the original 30 inch chemical sewer line, which emptied into the lime settling basins (WR&SK, 1943). The outlet from this line was found blocked with brick and mortar.

Borings were completed beneath Manholes W21, W25, W27, 4-3, and 6-1. Samples were collected at approximately 5 ft intervals from the bottom of the manhole to the water table. The apron and channel of Manholes W21 and W25 are composed of deteriorated brick. In Manhole W27, the corbel appears to have been repaired or replaced. The apron is concrete and lies above the inlet and outlet. A portion has been broken to provide access to the pipes. Borings in Manholes 4-3 and 6-1 penetrated 0.3 to 1 ft of concrete before reaching soil.

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Table CS-SP-6. Manhole Reconnaissance Survey Observations. Page 1 of 1.

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Hanhol e	Depth (ft)	Material	Rin	Walls	Apron	Channel	Connections	Comments
W2.1	7.6	brick	cracked	brick missing at base	brick	brick and VCP	ede6	
W25	**	brick	no problems noted	white stains	brick	not solid	sdeb	
W26	9.2 to sediment	brick	no problems noted	gaps in morter, brick missing	no problems noted	no probleme noted	no problems noted	bottom filled with mediment
W27	5.1	concrete	br ok en	precast	broken for access to inlet and outlet	none	no probl ens noted	concrete floor is above inlet and outlet
W29	4 to sediment brick	brick	no probleme noted	cracked bricks, orange stain	no problems noted	no problems noted	no probleme noted	bottom filled with sediment
6-1	9.2	brick	no problems noted	cracked bricks, gaps in mortar	brick	soft in some areas	no problema noted	
-1	about 3	brick	no problems	broken bricks at top	soft	not continuous no problems noted	no problema noted	
5-I	8.6	brick	cracked	cracked bricks	no problems noted	no problems noted	no problema noted	approximately 3 ft of sediment in bottom
. 7-1	not measured	brick	no problems noted	cracked bricks, moisture	no problems noted	white deposits no problems noted	no problems noted	corroded open metal grates
1-3	not measured	brick	no problems noted	cracked bricks	no problems noted	white deposits no problems noted	no problems noted	storm drain with metal grates
«	ø.	precast	no problems noted	no problems noted	concrete	concrete	no probleme noted	
•	5.7	precast	no problems noted	concrete with bricks at base	concrete	concrete	no problems noted	•
υ		precast	no 11d	no problems noted	no problems noted	no problems noted	no problems noted	filled with trash and dirt, could only see about 3 ft down
-	11	brick	no problems noted	no problems noted	no problems noted	no problems noted	no problems noted	small amount of standing water

Dye and excavation studies were performed at the three trench sites: CSO1, located between Manholes W17 and W18; CSO2, located between Manholes W26 and W27; and CSO3, located between Manholes I2 and I3. During the dye study, segments of the sewer line were blocked at the manholes with inflatable plugs, and were filled completely with a solution of Rhodamine B, a red dye, for 24 hours.

Excavation exposed the top and one side of ten joints in Trenches CSO1 and CSO3 and nine joints in Trench CSO2. A sample grid was set up in each trench, which consisted of samples collected from beneath the pipe, from a boring located 1 ft from the pipe drilled to the water table, and from a boring located 5 ft from the pipe drilled to a depth of 15 ft below the pipe or to the water table. The grid was centered on the joint that appeared to have leaked the most dye. Samples for physical analyses also were taken from the trenches beneath the pipe and along the haunch of the pipe. The distribution of analytes detected within or above their indicator levels and the boring grid locations in the trenches are presented in Figures CS-SP-6a through -61, Section 3.2.4 of this report.

In Trench CSO1, the pipe is vitrified clay, 6 inches in diameter with 3 ft sections and mortar joints. Dye stains were noted on all joints (most notably, Joint 6) and in the soil along the pipe between Joints 3 and 5. The sample grid was set up on Joint 6 (Figure CS-SP-6b, Section 3.2.4). Additional samples were collected at Joints 3 and 10 where yellow stains were observed. A composite grab sample (Sample 10) of the yellow material was collected from along the top of the pipe. Physical Lamples were collected upstream of Joint 5.

During drilling of Boring 8, a sample was planned for the 13 to 14 ft interval, as measured from the ground surface. The sample was not recovered because the polybutyrate tube became stuck in the barrel; therefore, a sample was taken instead from the 14 to 15 ft interval. Boring 9 was drilled deeper than planned, to the water table, in order to verify the water level observed in Boring 8. A replacement sample, Boring 11, was collected because the holding time for semivolatile analyses was exceeded at the laboratory for

Boring 1. The replacement sample was analyzed only for semivolatile organic compounds and thiodiglycol.

The section of sewer line exposed in Trench CSO2 is 10 inches in diameter and is made of vitrified clay in 3 ft sections, and has cement mortar joints. Only nine joints and eight pipe lengths were exposed at the excavation because of underground pipes and a concrete foundation uncovered at the northern end of the trench. Dye stains were noted at Joints 2, 3, 4, 5, and 8 and along the lower half of the pipe between Joints 2 and 4. The pipe segment between Joints 3 and 4 had two longitudinal cracks through which dye had leaked. It was noted that prior to this investigation Joints 7, 8, and 9 had been patched with concrete. As a result of these observations, a sampling grid was set up around Joint 3 (Figure CS-SP-6c, Section 3.2.4). An additional sample was collected from beneath Joint 8 because dye had leaked from the concrete patch. Physical samples were collected at the midpoint of the section between Joints 3 and 4.

The pipe excavated in Trench CSO3 was 18 inch vitrified clay pipe with cement mortar joints. Most pipe sections showed cracking on the bells and some longitudinal cracks. Dye stains were noted on all joints, and Joint 6 showed the most extensive staining. Dye also leaked from a longitudinal crack that ran along the top of the pipe from Joint 2 past Joint 10, and from two longitudinal cracks along the side of the pipe from Joint 4 to Joint 6. Based on these observations, a sampling grid was set up around Joint 6 (Figure CS-SP-6d, Section 3.2.4). An additional sample was taken from above the section of pipe between Joints 5 and 6, and physical samples were taken at Joint 5 and upstream of Joint 10.

Samples were also collected for physical and chemical analysis from the eight MKE trench locations. Samples for chemical analysis were collected from beneath exposed joints, and one sample for physical analysis was collected from each trench. In Trenches MKE 2, MKE 6, MKE 7, MKE 19, and MKE 20, three joints were exposed and samples were collected from beneath each joint. In Trench MKE 4, four joints were exposed; however, a sample could not be

recovered from Joint 1. Only two joints were exposed in Trench MKE 21. In Trench MKE 3, three joints were exposed and there was no recovery at Joint 2.

The South Plants chemical sewer system was investigated during the winter of 1986-1987. A total of 68 borings, yielding 103 samples for chemical or physical analysis, were completed in the South Plants chemical sewer as shown in Table CS-SP-7.

Samples were analyzed by gas chromotography/mass spectrometry (GC/MS) for volatile and semivolatile organic compounds; by an inductively coupled argon plasma (ICP) screen for metals; and by separate analysis for arsenic, mercury, and thiodiglycol. Samples from directly beneath the sewer line or in the first interval in a trench were not analyzed for volatile organics because these soils were in contact with the atmosphere. Any volatile organics would have escaped by the time the samples were collected. Samples from MKE trenches were not analyzed for volatile organics or thiodiglycol, and a separate analysis was conducted for dibromochloropropane in samples from Trenches MKE 2, 3, 4, and 6. Appendix CS-B presents the specific target analytes for which laboratory analyses were conducted. Physical samples were analyzed for fluid content, density, compaction, and grain size to de ermine if the pipe had been properly designed and installed.

3.2.2 Field Observations

To ensure safety, in situ air monitoring was conducted during sampling operations using a photoionization detector (HNU) and an organic vapor analyzer (OVA). HNU readings were recorded above background levels in 37 samples. Elevated OVA readings were noted in 21 samples. These readings are presented in Table CS-SP-8, Section 3.2.4 of this report.

Table CS-SP-7
BORINGS, DEPTHS, AND SAMPLES

Page 1 of 3

Boring Manhole		Depth From Ground Surface (ft) 28.0	Depth Beneath Sewer Invert (ft) 20.4	No. of Samples
Manhole	W25	27.2	20.8	5
Manhole	w27	27.2	22.1	5
Manhole	4-3	25.5	17.6	5
Manhole	6-1	30.0	20.8	4
Trench E CS01	oring No.	Depth From Groun Surface (ft) 5.0	d Depth Beneath Sewer Invert (1.0	
(Bottom	2	5.0	1.0	1
of Pipe	3	5.0	1.0	1
Depth =	4	5.0	1.0	1
4.0 ft)	5	5.0	1.0	1
	6	5.0	1.0	1
	7	5.0	1.0	1
	8	16.0	12.0	3
	9	23.0	19.0	5
	10+	NA	NA	1
	11	5.0	1.0	1
	12*	5.0	1.0	2
CS02	1	8.8	1.0	1
Bottom	2	8.8	1.0	1
of Pipe	3	8.8	1.0	1
Depth =	4	8.8	1.0	1
7.8 ft)	5	8.8	1.0	1
	6	8.8	1.0	1
	7	12.8	5.0	2
	8	12.8	5.0	2
	9 *	8.8	1.0	2

[†]grab sample
*physical sample

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Trench CS03	Boring No.	Depth From GroundSurface (ft)	Depth Beneath Sewer Invert (ft) 1.0	No. of Samples
(Bottom	2	12.5	1.0	1
of Pipe	3	12.5	1.0	1
Depth =	4	12.5	1.0	1
11.5 ft)	5	12.5	1.0	1
	6	26.5	15.0	4
	7	26.5	15.0	4
	8**	10.8	-0.7	1
	9*	11.8	0.3	1
	10*	12.3	0.8	1
	11*	11.5	0.0	1
	12*	12.5	1.0	1
MKE 2	1	6.8	1.1	1
(Bottom	. 2	6.5	0.7	1
of Pipe	3	6.8	1.2	1
Depth = 5.8 ft)	Physical*	6.1	0.3	1
•				
MKE 3	1	9.5	0.9	1
(Bottom	3	9.9	1.3	1
of Pipe Depth =	Physical*	9.3	0.7	1
8.6 ft)				
MKE 4	2	8.5	0.9	1
(Rottom	3	8.5	0.9	1
of Pipe	4	7.9	0.3	1
Depth = 7.6 ft)	Physical*	8.0	0.4	1

*physical sample ** Sample was taken above the pipe where dye was noted.

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	Depth Beneath Sewer Invert (ft) 0.5	Depth From Ground Surface (ft) 8.8	Boring No.	Trench MKE 6
1	0.9	9.2	2	(Bottom
1	0.9	9.2	3	of Pipe
1	0.2	8.5	Physical*	Depth =
				8.3 ft)
1	0.7	6.4	1	MKE 7
1	1.0	6.7	2	(Bottom
1	0.8	6.5	3	of Pipe
1	0.6	6.3	Physical*	Depth =
				5.7 ft)
. 1	0.9	4.4	1	MKE 19
1	1.1	4.6	2	(Bottom
1	0.7	4.2	3	of Pipe
1	0.7	4.2	Physical*	Depth =
				3.5 ft)
			•	
				•
1				_
1	0.4	4.5	Physical*	_
				4.1)
1	1.1	9.0	1	MKE 21
1	1.1	9.0	2	(Bottom
1	0.4	8.3	Physical*	of Pipe
				Depth =
		,		7.9 ft)
1 1 1 1 1	0.7 0.4 0.9 0.4	4.2 4.8 4.5 5.0 4.5	Physical* 1 2 3 Physical* 1 2	Depth = 3.5 ft) MKE 20 (Bottom of Pipe Depth = 4.1) MKE 21 (Bottom of Pipe Depth =

*physical sample

An M18A2 test kit was used to monitor for the presence of chemical agents in the borehole and samples according to standard operating procedures. The M18A2 is used as a backup test if an M8 alarm is triggered, as a substitute for an M8, and as a specific check for the presence of mustard. The M18A2 detects G agents, V agents, all forms of mustard, and lewisite. Specifically at RMA, the M18A2 test kit is used to detect GB (sarin), VX, H (mustard), HD (distilled mustard), and L (lewisite), based upon the knowledge that these agents were manufactured, stored, or demilitarized at the site. The detection limit for all mustard agents is 0.5 milligrams per cubic meter (mg/m³); the detection limit for all G agents, VX, and L is 0.2 mg/m³.

No chemical agents were detected during the field program by the M18A2 monitoring. No unexploded ordnance, buried metal, or other objects were detected during sampling.

3.2.3 Geophysical Exploration

No geophysical exploration of the South Plants chemical sewer system was conducted as unexploded ordnance, buried metal, or other buried objects were not likely to be present.

3.2.4 Analyte Levels and Distribution

A wide range of target and nontarget analytes were detected in samples from along the chemical sewer in South Plants. The number of samples containing each analyte, and the concentration range, mean, median, standard deviation, detection limit, and indicator level are listed in Table CS-SP-8. The results of geologic field observations, air monitoring during drilling, and the chemical analysis of each soil sample are summarized in Table CS-SP-9. Results from the analyses of the physical samples for fluid content, dry density, compacted fluid content and compacted dry density are presented in Table CS-SP-10. Grain size distributions as determined from the physical samples are presented in Figures CS-SP-5a-p. The distribution of the analytes detected within or above their indicator levels in the field program is presented in Figures CS-SP-6a-1. A tabulation of all analytical data associated with the field program is presented in Appendix CS-B.

Table CS-SP-6. Summary of Analytical Results for Chemical Severs - South Plants. Page 1 of 1. Concentration (ug/g)

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					Concentratio	10m (ug/g/	,,,,	
Constituent	Mumber of				Standard	Detection	Detection	Indicator
Detected	Samples*	Range	Median	Hean**	Deviation.	Limit	Limit	Level
Volatiles (Ness)	•	;				,	•	1
1,4-Dichloroethene	~	ə ;		,	•	9.0	n.0	2
1, 1, 1-Trichloroethane	-4	5.0	•	ı	•	7.0	e	ž
1,1,2-Trichloroethane		a.0		1 (•••	۳.	2
	• :	1-20 07-1	٠,	n (7 1
Bicycloheptadiene	2	0.7-70	•	01	02	- 0	m (ב ב
Carbon tetrachloride	77	0.4-200	2	9	9	6.3	0.3	30
Chloroform	22	0.8-400	•	30		0.3	r. 0	2
Chlorobenzene	•	2-20	•	•	∞	1.0	0.3	7
Dibromochlotopropane	11	6-7000	1000	2000	2000	2.0	7.0	2
Dicyclopentadiene		~		•		0	0.3	2
Sthylbensene	~	3-20			•	7.0	 	7
B-Xylene	10	0.9-100	~	10	2	8. 0	6.7	ភ្ន
Methylene chloride	13	1-9	~	m	7	2.0	0.7	70
Methylisobutyl ketone	-	s.	•	1		0.7	0.3	7
o- and p-Kylene	m	9-40		,	•	5.0	0.3	70
Tetrachloroethylene	27	0.5-90	•	01	20	0.3	0.3	10
Toluene	18	0.4-300	20	70	100	0.3	0.3	70
Trichloroethylene	-	9.0	,	•	1	0.5	0.3	10
•								
Semivolatiles (M=65)	;					•		;
Aldrin	E	0.4-40,000	901	999	2006	6.7	F	1
Attatine	7	01-7	,	•		S	F. 0	3 :
Chlorophenylmethyl sulfone	- - 1	0.3	, ;			0,3	ø.	i i
Dibromochloropropane	5 6	0.4-20,000	8	2000	2000			3 :
Dich lorodipheny Lethane		0.8-7	7	m (7	٠.	7.0	3 2
Dichlorodiphenyltrichloroethane	hame 14	0.8-500	20	9	100	٠.,	• •	3 1
Dicyclopentadiene		S		, ;	. :	9.7	÷.	, a
Dieldrin	D.	0.3-200	n i	30	90		? •	3 1
Hexachlorocyclopentadiene	*	0.7-4000	50	700	1000	٠.٠	m. c	2 5
Isodrin	53	1-1000	30	100	200		6.3	3 :
Parathion	7	20-30	; ,	1 4	. :	6.0	•	3 2
Supone	12	0.7-30	m	6	10	9.0	6.3	20
Dibromochioropropene (M=11)	11	13-32,000	260	3700	0096	0.005	0.014	DE
() Table Table 10 10 10 10 10 10 10 1								
Charten	71	1.3-34	5.8	8.9	9.5	0.74	99.0	1.0-2.0
Chronium	. es	7.8-72	13	15	=======================================	6.5	5.2	25-40
Copper	7	10-1500	34	52	160	4.7	6.	20-35
[rest	47	8.4-640	23	11	93	4.4	12.7	25-40
sinc	85	26-820	83	110	120	8.7	9.5	04-09
Aresolc (Meas)	97	3.3-740	12	98	160	2.5	9.0	DL-10
	}							
Hercury (M-86)	39	0.057-8.8	0.39	1.4	2.2	0.050	0.060	DL-0.10
Thiodiglycol (N=57) Thiodiglycol	~	3.2-14	1			4. 2	0.0	10
Chloracetic acid	-	230			1	35.5	0.0	ä
: :	•					4		

DL - The indicator level is the detection limit for DataChem and CAL Laboratories, as appropriate N - Number of samples analyzed * - Number of samples in which the constitutent was detected * - Number of samples in which the constitutent was detected ** - Nedian, mean, and standard deviation not calculated when constituent detected in fever than 5 samples Task 10; 5086A/1052A; Rev. 7/01/88

Table CS-SP-9. Results of Pield Study. Page 1 of 24.

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			MH W21					
Depth (feet) Geologic Material	8.0-9.0 Sandy Claystone	12.0-13.0 Sandy Claystone	17.0-18.0 Sandy Claystone w/Gravel	22.0-23.0 Sandy Siltstone	27.0-28.0 Claystons/ Siltstone	6.9-7.9 Bandy Gravel/ Clayey Sand w/Silt	11.6-12.8 Clayey Sandstone Trace Silt	16.2-17.2 Bandy Clayey Biltatone
Percent PinesVO	8	06	75	65	00	0/30	35	90
AIR HOMITORING			•					
Volatile Organic Readings (ppm)			•					
EDMOS	BKO	BRD	~	BKD	BKD	10		15
CVAS	Ħ	N.	E	æ	N.	98	9	30
SOIL CRENISTRY								
Volatiles (ug/q)								
	i	č		BDT.	BDL	BDC	708	JON
1, 2-Dichloroethane	701	3 6	30 8	E G	BDL	BDL	108	70 8
1,1,1-Trichloroethane		100	100		BOL	30£	708	108
1,1,2-frichloroethane	3 2	3 2		708		20		708
	700	3 6	} ^	108	3 DF	22	•	305
Bicycloheptadiene	y 4	•		BOL	BDL	70	-	108
Carbon tetrachioride	, 5			8.0	7	400	•	108
Chlorore	2	, e	. ~	BOL	B D[.	70	30 £	308
Chlorobensene		2 0	. 10	308	708	0009	2000	308
Dipromocnion opens		, in	305	108	BOL	308	102	708
Dicyclopentadiene	3 .		an t	BDE	BDL	20	102	708
Sthylbenzene	7 5	3 -	300	JOB.	BDL	700	-	308
H-Xy lene	9 7			2	308	•	•	308
Methylene chloride	70E	,		a di	BDT	BDL	2	TQE
Methylisobutyl ketone	708			TOR TOR	BDL	9	709	20 5
o- and p-xylene	9	700	3 6		BDL	40	.	706
Tetrachloroethylene	•	0.7	? ;	3 2	\$ C	300	,	10 8
Toluene	20	m	208	700	? .		MD.	708
	70	BDL	BDL	308	200			

BDL - Below detection limit

BKD - Background

NR - Background

NR - Not recorded

S - As referenced to calibration standard of methane for OVA, and benzene for HNU; reading has been adjusted to account for background level

S - As referenced to calibration standard of methane for the nearest 5 percent

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							ME W25	
Depth (feet)	0.6-0.8	12.0-13.0	17.0-18.0	22.0-23.0	27.0-28.0	6.9-7.9	11.0-12.8	16.2-17.2
SOIL CHEMISTRY (Continued)								
Semivolatiles (ug/g)								į
		ju	901	BDL	10	10000	200	10E
	200		708	BDL	BDL	706	702	
-	700		BOL	708	708	102	7 5	
n I tone	102		5.0	BDL	7.0	10000	2 6	
		108	100	BDC	308	702	2	
Dichlorodipheny let mane		JOR	BDL	BDL	708	2		100
Dichlorodiphenyltrichloroethene		i de	BDL	308	108	702	2 2	
Dicyclopentadiene		3 CE	8.0	BDC	-	001	7 100	
Dieldrin	770		TO.	308	306	2	100	
Mexachlorocyclopentadiene	306	3 6] o	708	3 0£	300		
Isodrin	_ ;	2 6	2 00	708	TQ X	3 08		3 6
Perathion	305		, m	BDC	•	708	702	3
Supona	709	3	•				;	1
•	;	5	4	\$	K	¥	4	£
Dibrosochloropropane (ug/g)	4		į					
ICP Metals (ug/g)						1	ì	ğ
	9	B DC	305	30 0	702	5.0	7 6	
Cadeius	2 4	3 0£	BDC	708	306	77	700	; #
Chronium	; ;	*	305	Ç	42	7 :	3 =	102
Copper	, c	1 08	25	16	7.	7 2		38
	96	68	66	68	6	76	3	:
		;	ŗ	BDT.	BDL	130	JOE	BDL
Arsenic (ug/g)	300	•	3	1		,	9900	
Neccury (ug/g)	BDL	BDL	BOL	305	108	50 25		i
Thiodigiycol (ug/g)						;	Ž	ĵ
	i ca	3.2	BDL	BDL	30 6	*		2
Thiodiglycol Chloroscetic scid	7 4	K	NA	KN	¥	730	1	 -

BDL - Below detection limit NA - Not analyzed

Table CS-SF-9. Results of Field Study. Page 3 of 24.

	HM 1025	MW W25 (cont.)			MR W27		
Depth (feet) Geologic Material	21,2-22,1 Clayey Silty Sandstone	26.2-27.2 Gravelly Sandstone Trace Clay	6.5-7.5 Concrete/ Silty Clayey Sandstone	11.5-12.5 Sandstone W/Silt and Clay	16.2-17.2 Silty Claystone W/Sand/ Sandstone W/Silt and	21.2-22.2 Sandstone w/ Clay and Bilt	26.2–27.2 Bilty Sendstone W/Clay
Percent PinesVO	30	ĸ	0/20	10	90/10	10	96
AIR HOMITORING							
Volatile Organic Readings (PPR)							
No.	63	20	BKD	•	30	30	20
OVAS	, 56	8 9	BKD	20	30	30	100
SOIL CHEMISTRY							
Volatiles (ug/g)							
1.2-Dichloroethane	BDL	BDL	BDL	BDL	BDL	108	3 0£
1,1,1-Trichloroethane	BDL	BDL	BDL	306	708	200. 201.	708
1,1,2-Trichloroethane	300		BDE.	300	BDL	708	708
		302	2	, 2	•	-	~
nicyclonepressers	708 807	BOL	BDL	20	07	~ '	• •
Chloreform	30 6		708	<u>د</u>	e i	_ •	
Ch lor obensene	BDL	BDL	3 0£	BD C 200	700	30	708
Dibromochloropropane	305	70 £		and a	PDF	BDL	BDL
Dicyclopentadiene	70 6	300	JOE N	108	708	701	BDE
Etnylbenzene	NO.	108 108	BDL	BDL	BDL	308	706
Mathematical chiloride		TOR	BOL	BDL	7	7	m i
Methyliachutyl ketone	108	708	708	BDL	PDC		
o- and p-Xylene	BDL	308	BDL	305	10 2	7 4	2 2
Tetrachloroethylene	BDL	BD L	•	10	٠.٠	709	2 ~
Toluene	BDL	BDE	708	20	o 6	T and	
Trichloroethylene	BDL	BDL	BDL	708	108		}

BDL - Below detection limit BKD - Background 8 - As referenced to calibration standard of methane for OVA, and benzene for HNU; reading has been adjusted to account for background level VO - As determined by visual observation and rounded to the nearest 5 percent

Table CS-SP-9. Results of Pield Study. Page 4 of 24.

	3	Me took (comb.)			MH W27		
Depth (feet)	21.2-22.1	26.2-27.2	6.5-7.5	11.5-12.5	16.2-17.2	21.2-22.2	26.2-27.2
SOIL CHEMISTRY (Continued)							
Semiwolatiles (ug/g)							
21456	JOE	\$	100	90	100	BOL	,
	BDL	¥Z.	BDL	BDL	PDF	3 0 6	
Chlorophenylmethyl sulfone	708	¥	30%	0.3	708	30 6	10 10
Dibroschloropropine	305	2	01	20	100	5	700
Dichlorodiphenylethane	BDL	¥	7	3 05	305		100
Dichlorodiphenyltrichloroethane		\$	30	~	6	708	
Dicyclopentadiene		KA K	305	308	708	700	
Diel Aria	BDL	KY.	06	7	-	709	7 .
Brack Crocks Committed and	PDT	Y.	BDL	8.0	0.7	102	
		4	BOL	ø	~	308	708
	108	K.	BDL	BDL	300	200	20 1
Supone	TOE	ž	306	7	7.0	nor.	702
Dibromochloropropane (ug/g)	\$	MA	¥	¥	\$	\$	\$
ICP Netals (ug/g)							
			;	i	č		BDC
Cadmium	708	102	708	7.7	2 6	<u> </u>	=
Chromium	305	91	9	.		: =	92
Copper	37		7 :	9 7		1 9	23
Lead	14 95	118	130	100	78	98	93
	708	708	15	BDL	BOL	BDL	708
A A A A A A A A A A A A A A A A A A A							•
Hercury (ug/g)	BDL	308	2.0	0.061	308	306	108
Thiodiglycol (ug/g)							
Thiodiglycol	305	BDL	80t 80t	80f. 80f.	80L 80L	306 8 0£	30F
Chloroacetic acid	-	:					

BDL - Below detection limit NA - Not analyzed

Table CS-SP-9. Results of Field Study. Page 5 of 24.

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			₩ 4-3			=	# 6-1
Depth (feet) Geologic Material	3.2-4.2 Concrete/ Silty Clayey Sand	8.2-9.2 Clayey Silty Sand	12.2-13.2 Clayey Silty Sand	17.2-18.2 Silty Sand W/Clay	22.2-23.2 Silty Sand W/Clay	12.5-13.5 Silty Sand Trace Clay	17.5-18.5 Clayey, Bilty Band
Percent PinesVO	0/20	25	40	40	30	20	30
AIR MOMITORING							
Volatile Organic Readings (ppm)							
	£	¥	X.	ž.	Ĕ		. OXO
OVAS	BKO	BKD	BKD	BKO	BKD	K D	1
SOIL CREMISTRY							
Volatiles (ug/g)							
1,2-Dichloroethane	BDL	BDL	Bot	708	BDL	BOL	BDL
1, 1, 1-Trichloroethane	BOL	BDL	BDL	BDL	BDL	BDL	BDL
1,1,2-Trichloroethane	305	BOL	BDL	BDL	708	JQ8	. 8.0
Dentene	BDL	BOL	BDL	BDL	3 0 6	TON	3 0f.
Bicycloheptadiene	JOS	305	30 0	305	305	3 06	, , , ,
Carbon tetrachioride Chloroform	300	305	BDL	BDL	102	202	702
Chlorobenzene	708	BDL	BDL	BDL	BOL	BDL	TOB
Dibromochloropropane	BDL	208	BDL	BDL	BDL	TOR	BDL
Dicyclopentadiene	BOL	BDL	BDL	BDL	BDL	30 6	BDL
Ethylbenzene	TQE	305	BDL	B DL	BDĽ	708	305
B-Kylene	BDL	BDL	BDL	DD.	306	305	3 0f.
Methylene chloride		-	-	BDL	306	306	202
Methylisobutyl ketone	708	708	BOL	BDL	BDL	BDL	BDL
o- and p-xylene	700	305	BOL	BDL	BDL	702	104
Tetrachloroethylene	BOL	708	BDL	BDL	30 f	BDL	305
Toluene	BDC	PDF	BOL	BDL,	JOE	702	101
Trichloroethylene	BDL	9.0	BDL	BDL	BDL	708	108

BDL - Below detection limit
BKD - Background
NR - Background
NR - Not recorded
8 - As referenced to calibration standard of methane for OVA, and benzene for NNU; reading has been adjusted to account for background level
VO - As determined by visual observation and rounded to the nearest 5 percent

Table CS-SP-9. Results of Pield Study. Page 6 of 24.

			NH 4-3				AB 6-1
Depth (feet)	3.2-4.2	8.2-9.2	12.2-13.2	17.2-18.2	22.2-23.2	12.5-13.5	17.5-18.5
SOIL CHEMISTRY (Continued)							
Semivolatiles (ug/g)							
Aldrin	~	BDL	BOL	BOL	BO 1.	708	708
Atrazine	305	BDL	BDL	709	BDL	708	BDL
Chlorophenylmethyl sulfone	305	BOL	700	708	3 0£	108	709
Dibromochloropropane	308	306	Bot	108	BDL	300	TOE.
Dichlorodiphenylethane	308	BDL	306	708	B 0£	30 6	BDL
Dichlorodiphenyltrichloroethane		708	308	PD[3 DF	308	BDL
Dicyclopentadiene		BDL	308	PD C	BOL	206	JQE.
Dieldrin	BDL	709	BDL	BDL	BDL	BOL	708
Bexachlorocyclopentadiene	7 0 0	308	706	7 0 0	BDL	DOC	70L
Isodrin	3 07	BDL	BDL	708	TQ Q	308	BDL
Parathion	702	308	BDL	BDL	7 08	108	BDL
Bupona	BDL	1 6	BDL	BOL	BDL	BDL	305
Dibromochloropropane (ug/g)	1	*	YN.	ž	ž	NA NA	\$
ICP Metals (ug/g)							
Cadajus	BOL	708	708	BDL	BOL	108	BOL
Chromium	21	12	20	21	3 0£	305	BDL
Copper	13	10	14	20	19	47	42
Lead	19	₹.	16	7.	20	36	12
Sinc	54	37	82	72	73	8 2	110
Arsenic (ug/g)	708	708	3 0£	BDL	DOC	BDL	BDL
Mercury (ug/g)	BDL	BOL	BDL	BDL	BOL	BDC	B 01.
Thiodiglycol (ug/g)							
Thiodiglycol Chloroacetic acid	30g	BOL	BDL BDL	B DL B DL	30f 30f	BDL NA	BDL

BDL - Below detection limit NA - Not analyzed

Table CS-SP-9. Results of Pield Study. Page 7 of 24.

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Depth (feet) Geologic Material Percent PinesVO AIR MONITORING Volatile Organic Readings (RDPS) ENUS GVAS 1.2	MH6-1 (Cont.) .5 29.0-30.0 .e Slitstone/ Claystone 100 BKD 0.6	Boring 1 4.0-5.0 Claystone 100	Boring 2 4.0-5.0 Sandy Claystone w/Gravel	Boring 3 4.0-5.0 Sandy	4.0-5.0 Sandy	Boring 5 4.0-5.0 Sandy	Boring 6 4.0-5.0 Sandy
23.5-24 Nudeton Seedings (ppm) 0.2	s .	4.0-5.0 Claystone 100	4.0-5.0 Sandy Claystone w/Gravel 65	4.0-5.0 Sandy	4.0-5.0 Sandy	4.0-5.0 Bandy	4.0-5.0 Sendy
	100 BKD 0.6	100 NR	65	Claystone w/Gravel	Claystone	Claystons	Claystone
	BKD 0.6	XX		65	65	70	02
	9KD 0.6	Œ					
	BKD 0.6	æ					
			KN KN	ž	E.	E	Ĕ
		BKD	BKD	BKD	BKD	BKD	BK D
SOIL CREMISTRY							
Volatiles (ug/g)						i	i
	ED.	305	BDL	BDL	BDL	7	3
		BDL	3QE	BDL	708	102	70
1,1,1-Trichloroethane U.S		BDE	BDL	BDL	BOL	706	
richioroethene		BDt	BDL	306	708	208	3 6
		708	305	708	306	708	
		BDL	30 F	BDL	BOL	7 (a)	1
rachloride	100	BDL	BDL	708	306		
	30	BDL	BDL	BDL	308	708	10.5
	i	JQ8	708	B DL	BDL	305	100
		BDL	BDL	Bot	30 £	705	
21.62.6	and a	308	305	BDL	202	70	3 6
•0•1) i	708	BDL	BDL	305	202	300
	7 6		308	BD'.	nor.	108	, ;
	3 20 2	202	BDL	B DL	NOT.	708	
ketone	200		BDL	BDL	708	308	300
o- and p-Xylene	ממו	7	4	RDI.	_	0.5	~
lene	108	- i	702		BDL	101	BDL
Toluene	306	708	2 4	1 c	PD.	70 8	JQE
Trichloroethylene BDL	BDL	706	708	100	3	!	

BDL - Below detection limit

BKD - Background

NR - Mot recorded

8 - As referenced to calibration standard of methane for GVA, and benzene for HNU; reading has been adjusted to account for background level

8 - As referenced to calibration standard of methane for GVA, and benzent

90 - As determined by visual observation and rounded to the nearest 5 percent

Table CS-SP-9. Results of Pield Study. Page 8 of 24.

					Trench CS01			
	MH6-1	MH6-1 (Cont.)	Boring 1	Boring 2	Boring 3	Boring 4	Boring 5	Boring 6
Depth (feet)	23.5-24.5	29.0-30.0	4.0~5.0	4.0-5.0	4.0-5.0	4.0-5.0	4.0-5.0	4.0-5.0
SOIL CHEMISTRY (Continued)								
Semivolatiles (ug/g)								
Aldrin	BDL	BDL	MA*	306	BDC	0.4	BDf.	709
Atrasine	BOL	BDL	NA.	BOL	BDL	DOL	BOL	305
Chlorophenylmethyl sulfone	BDL	708	KA*	708	JQ8	BDL	BOL	305
Dibromochloropropane	BDC	708	NA.	708	708	BDL	BDL	Bot
Dichlorodiphenylethane	BDL	BDL	NA.	BDL	BDC	BDL	PD[TON.
Dichlorodiphenyltrichloroethane	B DL	BDL	NA*	BDL	BDL	BOL	BDĽ	708
Dicyclopentadiene	BDL	BDL	NA.	BDL	7IQ8	BDL	PDF.	BDL
Dieldrin	BDL	308	NA.	0.5	0.5	0.3	7	~
Rexachlorocyclopentadiene	BDL	708	NA.	BDL	BDL	70 8	JOE	B DL
Isodrin	BDL	BDL	NA*	BDL	BDL	BDL	BDL	305
Parathion	BDL	BDL	NA.	BDL	BDL	BDL	305	305
enodns	BDL	BDL	KY.	BDL	BDL	708	108	708
Dibromochloropropene (ug/g)	ж	\$	¥¥	¥	N.	X	ž	æ
ICP Metals (ug/g)								
Cadatus	BDL	BDL	BDL	BDL	BDL	BDL	BOL	BDL
	14	100	: =	<u> </u>	: -	12	13	14
Copper	46	3 6	: :	35	**	: *	33	32
Lead	19	28	BDL	BDL	BDL	BDL	BDL	708
ginc	100	80	140	110	120	160	120	110
Arsenic (ug/g)	BDL	708	9.8	6.5	12	5.3	12	8.2
Nercury (ug/g)	BDL	BDL	0.10	BDL	BDL	0.16	0.075	0.12
Thiodiglycol (ug/g)								
Thiodiglycol	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chloroacetic acid	YY	K.	BDL	BDL	BDL	BDL	TOE	108

BDL - Below detection limit
NA - Not analyzed
* - Exceeded laboratory holding time

Table CS-SP-9. Results of Field Study. Page 9 of 24.

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-5.0 4.0-5.0 sendy detone Claystone 60 60 BKD BKD BKD BKD BKD BKD BDL BDL BDL BDL BDL BDL BDL BDL BDL BD		14.0-15.0 Claystone w/Gravel 55 MR	4.0-5.0 Clayey Sandstone 40	8.0-9.0 8andy Claystone 60 40	13.0-14.0 13.0-14.0 8andy 60 60	18.0-19.0 Sandy Claystone 55
A.0-5.0 4.0-5.0 Clayer Sandy Sandstone Clayetone 30 60 8KD 8KD 8KD 8KD 8KD 8BL		14.0-15.0 Clayatone w/Gravel 55 BKD	4.0-5.0 Clayey Sandstone 40	60 60 250 250	13.0-14.0 Sandy Claystone 60 80	18.0-19.0 Sandy Claystone 55 2
Clayey Sandy Sandstone Claystone 30 60 MR BKD BKD BKD BBL BBL BBL BBL BBL BBL BBL BBL BBL BB		Claystone w/Gravel 55 MR	Clayey Sandstone 40 1	Bandy Claystone 60 40 250	Sandy Claystone 60 80 160	Sandy Claystone 55 55
Sandstone Claystone 30 60 WR BKD		a/Gravel	Sandstone 40 1 2 2	Claystone 60 60 250	60 60 160	Claystone 55
30 60 108 108 108 204 108 204	70 1.5 NR	BAKD	2 1	9 9 9 9 50 50 50	9 99	SS ~ ••
30 60 WR BKD BKD BKD BKD BKD BKD BKD BKD	1.5 NR	SS BRO	2 11 6	250	9 9 91	% *
708 708 708 708 708 708 708 708 708 708	1.5 NR	BACO	c	40	90	N .
8KD 8KD 8KD 9DL 8BDL 8BDL 8BDL 8BDL 8BDL 8BDL 8BDL 8B	1.5 NR	EN E	24	40 250		N 0
NR BKD BKD BKD BKD cothane BDL BDL BDL BDL BDL BDL BDL BD	1.5 NR	NA NA	7 7	250	160	~ •
BKD BKD hane BDL BDL oethane BDL BDL ene BDL BDL ene BDL BDL ene BDL BDL	X X	E	~	250	160	•
hane BDL BDL octhane BDL BDL BDL BDL Cothane BDL						
hane BDL BDL cethane BDL BDL BDL BDL BDL ene BDL BDL						
708 708 708 708 708 708 708 708						
708 708 708 708 708 708	BDL	BDL	BDL	BOL	308	BOL
708 708 708 708	BDL	BDL	BDL	BDL	108	70 8
BDL BDL BDL PDL	BDL	BDL	305	BOL	308	305
heptadiene BDL BDL	308	708	BDL	3 0£	BOL	702
	BDL	BDL	BDL	JON	708	3 0£
BDL	BDL	708	305	BOL	301	102
708 708	306	BDC	708	308	702	70.
BOL	BDL	108 108	708	BDL		
	BOL	108	108	30.C		70.
diene BDL BDL	801	708	305	704		3 6
	709	100				
		100	100			
Methyltechital between mit mit.	200 g	202			102	102
	3 00 00 00 00 00 00 00 00 00 00 00 00 00	102	JOE C	TQE	J	
	1	an t	BDT.	JOS	PDF	708
708 708	JOB .	BDL	TOE	708	TON.	101
coethylene BDL BDL	BDL	BDL	109	PDC	108	102

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BDL - Below detection limit
BKD - Background
WR - Mot recorded
S - As referenced to calibration standard of methane for OVA, and benzene for HNU; reading has been adjusted to account for background level
VO - As determined by visual observation and rounded to the nearest 5 percent

Table CS-SP-9. Results of Field Study. Page 10 of 24.

1

			0 000			Bori	Boring 9	
Depth (feet)	4.0-5.0	4.0-5.0	8.0-9.0	14.0-15.0	4.0-5.0	8.0-9.0	13.0-14.0	18.6-19.0
SOIL CHEMISTRY (Continued)								
Semivolatiles (ug/g)								
	ŽŽ.	BDL	BDL	BDL	BDL	108	306	
Atoria		, Q	PDF	305	708	BDE	708	
Attesine	ND.	306	308	708	306	708	308	
		JQE	BDL	BOL	BDL	708	108	702
Dibromochiotopene		FD.	BDL	30g	708	ĵg	708	108
		PDf.	BDL	308	BOL	308	100	708
pichlotophenyltitetemic		EDĮ.	BDL	BDL	BDL	JQE	102	308
Dicyclopentediene	3 .	7.00	JOR.	308	30 E	709	308	
Dieldrin	, č	7.00		BDL	BDL	708	302	20
Bezachlorocyclopentadiene	3 2		30E	BDL	BOL	306	708	702
Isodrin			BDT	708	BOL	308	308	709
Parathion				BDI	BDL	BDL	108	108
guoding	202	702	700	1	1			
Dibromochloropropane (ug/q)	KN.	K.	ž	\$	¥	KN KN	á	4
ICP Netals (ug/g)								,
	;	160	70	BDL	BDL	308	308	20
Cadmium	709	707		1	BDC	305	70	6.8
Chromium .	=	1		? ?	58	33	30	*
Copper	70) C	2	BDT	BOL	305	108	702
Lead A.c.c.	80. 260	110	110	110	98	76	52	\$
		,	Ğ	BDL	BDL	308	101	BDL
Arsenic (ug/g)	CT	;					•	i
Hercury (ug/g)	0.26	BDL	708	BDL	BDL	308	708	102
Thiodiglycol (uq/q)								•
# 1 0.4 (a) 1 com	TOR.	BDL	BDL	308	BDĽ	708	192	
Chloroscetic acid	JQ	308	BDL	BDL	BDL	BDE	7(ca	

BDL - Below detection limit MA - Not analyzed

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Table CS-SP-9. Results of Pield Study. Page 11 of 24.

1

	Trench	CS01 (continued)	uned)			The House Tr		
	Boring 9 (cont.)	Grab 10	Boring 11	Boring 1	Boring 2	Boring 3	Boring 4	Boring 5
Depth (feet) Geologic Material	22.0-23.0 Sandy Claystone	3.0 Composite Grab Sample	4.0-5.0 Claystone	7.8-8.8 Sandy Claystone	7.8-8.8 Silty Clay W/Sand	7.8-8.8 Sandy Silt w/Clay/Silty Claystone Trace Sand	7.8-8.8 8ilty Clay v/Sand	7.8-9.8 Silty Clay w/Sand
Percent PinesVO	55		100	75	90	70/95	95	8
AIR HOHITORING								
Volatile Organic Readings (ppm)	a							
BOOK	10	X X	BKD	BKD	BKD	EKC O	BKD	
OWAS	20	KN KN	E	N.	2	Æ	菱	Ę
SOIL CHEMISTRY								
Volatiles (ug/q)								
1,2-Dichloroethane	BOL	YN.	¥	BDL	BDL	702	BDE	J Q E
1,1,1-Trichloroethane	BDE	K	X.	BDL	BDL	BDL	BDL	PDI.
1, 1, 2-Trichloroethane	BDL	МА	NA	BDL	BDL	3 00	BDC	
Denzene	BDL	KA	KA KA	108	708	708	702	700
Bicycloheptadiene	300	YN:	YN:	20	S .	P 9	s. (2 9
Carbon tetrachloride	305	Z :	ž i	B 4	90 oc	g 5	9 -	2 5
Chlorobenzene	30 E	V 2	X X	20	708	BDL	. ~	101
Dibromochloropropane	BOL	Y.	N.	1000	2000	2000	2000	4000
Dicyclopentadiene	BDL	KN	NA.	BDL	BDL	708	308	108
Sthylbenzene	BDL	Y.	X	BDL	BDE	BDL	BDL	10 8
m-Xylene	BDL	KA	Y.	m	m	6.0	7	102
Hethysene chloride	BDL	W	NA	BOL	305	700	200	702
Methylisobutyl ketone	BDL	Y.	Y.	3 0F	B D[3 0£	30 £	102
o- and p-xylene	BDL	N.	¥	305		708	101	302
Tetrachloroethylene	BDL	¥¥	Y.	20	<u>۾</u>	91	2 :	
Toluene	BDL	NA NA	KA	200	200	96	2	20
Trichlornethylene	EDT.	¥	¥	BDL	B DL	205	205	702

BDL - Below detection limit
BKD - Background
NA - Not analyzed
NR - Not recorded
NR - Mot recorded
S - As referenced to calibration standard of methane for OVA, and benzene for HNU; reading has been adjusted to account for background level
VO - As determined by visual observation and rounded to the nearest 5 percent

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12 of
Page 1
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CS-8P-9.
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Table Co-sp-v. Nestice of their						Trench C802		
		CRUI (CONCINGO)	(pant		and and	Boring 3	Boring 4	Porting 5
	Boring 9 (cont.)	Grab 10	Boring 11	BOLING	- Kiri Ka			
Depth (feet)	22.0-23.0	3.0	4.0-5.0	7.8-8.8	7.8-8.8	7.8-8.8	7.8-8.8	.
SOIL CHEMISTRY (Continued)								
Semivolatiles (ug/g)						ļ	900	
		BDL	7	200	20000	200	1000 MDf.	, C
Aldrin		308	BOL	BDL	305	700		704
Atrasine		BDL	B D£	709	200		PDE	10000
Chloropheny amerika surrone		BDL	306	4000	2000		ğ	108
Dibromoch loropropane		BDL	BDL	TOS	305			BOL
Dichlorodipheny letneme		202	308	BDC	70.0	3 6	•	709
Dichlorotiphenyter tentor occurrent		JQQ	BDL	BDL	205		2	706
Dicyclopentagnene	706	s	0.5	20	708	. S	700	TOE
	BDE	108	108	200	706	2 2	200	702
Mexach lorocyclopen tautem	100	708	301	70	305		200	702
leodr in	HOL.	BDL	708	8 0[700	200	~	BDL
Parathios		305	305	BDL	708		ı	
Supons				•	4	Æ	4	4
Dibromochloropropane (ug/g)	нА	KA	K	<u> </u>	Ę			
ICP Metals (ug/g)					•	i		300
	i	7	××	BDL	1.3	2 2		BDL
Cadmium			2	8.5	13			102
Chromitum	4.6	, .	¥.	16	32	9 ;		65
Copper	R :	, e	¥	79	708	9 C		
Lead	30F	820	42	36	66	25	3	
Zinc	2	;	ŝ	Ç.	31	12	12	JOS
Arsenic (ug/q)	BDL	13	ž	}		;	9	0.48
Mercuty (ug/g)	BOL	2.3	NA	0.51	0.45	•		<u>:</u>
Thiodiglycol (ug/g)				į	ĵ	BDL	ŢQ R	301
Thiodiglycol	BOL	BD[BD[80f.	307	308	305	708	102

BDL - Below detection limit MA - Not analyzed

Table CS-SP-9. Results of Pield Study. Page 13 of 24.

### Boring 6				Trench C802 (continued	ontinued			Trench C803	
1.6-13.6 1.6-13.6 1.6-13.6 1.6-13.6 11.6-13.6 11.5-13.5 1.1.6-13.4 1.1.6-13.6 11.6-13.6 11.6-13.6 11.5-13.5 1.1.6-13.4 1.1.6-13.6 11.6-13.6 11.6-13.6 11.5-13.5 1.1.6-13.4 1.1.6-13.4 11.6-13.6 11.6-13.6 11.5-13.5 1.1.6-13.4 1.1.6-13.4 11.6-13.6 11.6-13.6 11.5-13.5 1.1.6-13.4 1.1.6-13.4 11.6-13.6 11.6-13.6 11.5-13.5 1.1.6-13.4 1.1.6-13.4 11.6-13.6 11.5-13.5 1.1.6-13.4 1.1.6-13.4 11.6-13.6 11.5-13.5 1.1.6-13.4 1.1.6-13.4 11.6-13.6 11.5-13.5 1.1.6-13.4 1.1.6-13.4 11.6-13.4 11.5-13.5 1.1.6-13.4 1.1.6-13.4 11.6-13.4 11.6-13.6 1.1.6-13.4 1.1.6-13.4 11.6-13.		Boring 6		ng 7		boring 8	Bering 1	Boring 2	Boring 3
100 40 60/35 50 50 0 0/100	Dopth (feet) Geologic Material	7.8-8.8 Silty Clay	7.8-6.6 Silty Sand W/Clay	11.8-12.8 Sandy Silt w/Clay/Clayey Sand w/Silt	7.8-8.8 Sandy Siltstone	11.8-12.8 Sandy Siltstone	11.5-12.5 Sand	11.5-12.5 Bani/Claystone	11.5-12.5 Band/Claystone
	Percent PinesVO	100	40	60/35	20	20	0	0/100	0/100
Needings (ppm) RKD S2 200 99 39 8KD 8K	AIR NOMITORING								
MATO 52 200 99 39 84D MATO MATO BKD BKD BKD BKD BKD BKD BKD MATO BDL	Volatile Organic Readings (ppm	্ব						٠	
MR BKD	\$ DATE	BKD	52	200	66	39	940		O SECO
hane 80L BDL BDL <td>OVAS</td> <td>Ĕ</td> <td>BKD</td> <td>BKD</td> <td></td> <td>BKD</td> <td>BRD</td> <td>Ĕ</td> <td>£</td>	OVAS	Ĕ	BKD	BKD		BKD	BRD	Ĕ	£
Mane 802 BDL BDL <td>SOIL CHEMISTRY</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	SOIL CHEMISTRY								
8DL BDL BDL <td>Volatiles (ug/g)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Volatiles (ug/g)								
801 801 <td>1,2-Dichloroethane</td> <td>708</td> <td>BDL</td> <td>BDL</td> <td>300</td> <td>BDL</td> <td>TOR</td> <td>BOC</td> <td>BDL</td>	1,2-Dichloroethane	708	BDL	BDL	300	BDL	TOR	BOC	BDL
BDL BDL <td>1, 1, 1-Trichloroethane</td> <td>BDL</td> <td>BDL</td> <td>708</td> <td>BDL</td> <td>306</td> <td>708</td> <td>ĵgg</td> <td>BDC</td>	1, 1, 1-Trichloroethane	BDL	BDL	708	BDL	306	708	ĵg g	BDC
BDL BDL 5 BDL 2 BDL BDL 0.9 6 BDL BDL 70 BDL BDL 5 10 200 BDL 200 BDL BDL 3 2 40 BDL 50 BDL BDL 8DL 8DL 40 BDL	1,1,2-Trichloroethane	B D[BOL	308	30F	708	TOE	108	
0.9 6 BDL BDL FDL 70 BDL BDL 3 2 40 BDL 200 BDL 9 33 2 40 BDL 50 BDL 9 8DL 8DL 4 BDL BDL BDL BDL BDL 8DL 2 8DL BDL	Denzene	BDL	305	ĸ.	BDL	7	PDI	302	702
5 10 200 BDL 9 3 2 40 BDL 50 BDL BDL 8DL 8DL 4 BDL	Bicycloheptadiene	6.0	•	BDL	BDL	92	7 08	108	
3 2 40 BDL 50 BDL	Carbon tetrachloride	.	91	200	708	200	708	•	
BDL Chlorofors	m	~	4	BOL	. 20	102 F	305		
801 200 801 1000 801 801 801 801 801 801 801	Chlorobenzene	109	708	-	708	•		702	702
BDL BDL <td>Dibromoch loropene</td> <td>700</td> <td>2 ~</td> <td>0007</td> <td>BDT.</td> <td></td> <td></td> <td></td> <td>102</td>	Dibromoch loropene	700	2 ~	0007	BDT.				102
BDL St hallbarens			2 ~	Buf.		, Q	ED.	9	
BDL	jog	BOL S	10	305		TOR	102	JOS.	
ne RDL BDL BDL <td>Methylene chloride</td> <td>Jda</td> <td>308</td> <td>708</td> <td>BDL</td> <td>BDL</td> <td>TON</td> <td>30f</td> <td>708</td>	Methylene chloride	Jda	308	708	BDL	BDL	TON	30f	708
BDL BDL BDL BDL BDL 2 4 90 80L 10 3 3 0.7 0.4 60 8DL 8DL 8DL 8DL 80L 8DL 8DL 8DL 8DL 8DL 8DL	Methylisobutyl ketone	308	BDL	BDL	BDL	JOH	708	305	708
2 4 90 80L 10 3 3 3 00 0.7 0.4 60 8DL 8DL 8DL 8DL 8DL 8DL	o- and p-Kylene	BDL	BDC	6	BDL	308	702	305	3 0f
0.7 0.4 60 BDL 300 BDL 8DL BDL BDL BDL BDL	Tetrachloroethylene	~	-	06	BDL	01	е	~	305
708 708 108 108 108 108 108 108 108 108 108 1	Toluene	0.7	0.4	99	BDL	300	ją	306	NOT
	Trichloroethylene	709	BDT	BDL	BDL	109	30 1	708	702

BDL - Below detection limit
BKD - Background
WR - Mot recorded
S - As referenced to calibration standard of methane for OVA, and benzene for HNU; reading has been adjusted to account for background level
S - As referenced to calibration standard of methane for the nearest 5 percent

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Table CS-SP-9. Results of Pield Study. Page 14 of 24.

			Trench CS02 (continued)	continued)			Trench C803	
	Boring 6	Bor	Boring 7	1	Boring 8	Boring 1	Boring 2	Boring 3
opth (feet)	7.8-8.8	7.8-6.8	11.8-12.8	7.8-8.8	11.8-12.8	11.5-12.5	11.5-12.5	11.5-12.5
MOIL CHRISTER (Continued)								
Semivolatiles (ug/g)					,			
	2000	20000	40000	9	1000	BDL	10	10E
Aldria		apt.	BOL	708	708	701	100	
Atrasine			709	108	BOL	3	208	
Chlorophenylmetnyl sullone			20000	4.0	200	B Dt	708	70
Dibromoch loropropane		ani.	3 01.	Jos	BOL	8 0¢	706	100
Dichlorodipheny.ethane			100	JQE	Bot	PDT.	702	79
Dichlorodiphenyltrichloroethane		7 6			BOL	PD f	DOL	J
Dicyclopentadiene	702	300	100	, L	708	BDC	709	105
Dieldrin	200	708	BDE.	ant.	108	3000	4000	300
Mexachlorocyclopentadiene	708	700	200	i de	9	305	70	
Isodrin				3 6	BDC	30£	301	3
Parathion	305	709	700	200	BDE	305	708	TOE
Supons	706	308	POL	700		ı		
Dibromochloropropene (ug/g)	4	KX	МА	KN	MA	Ž	£	4
ICP Metals (ug/g)								
	BD.C.	308	BDL	30£	700	JQE ;	705	3 4
	8.6	9.0	108	30 6	. 7.88	Ξ:	£1 \$: 2
	34	25	36	22	17	c;	250	
Total Total	19	708	BDL	BDL	308		2 6	
Hing	2	11	7.	67	7	79	:	!
	•	11	BDL	BDL	BDL	708	708	TON
Arsenic (ug/g)	2	:	!			•	•	
Mercury (ug/g)	1.3	0.64	0.29	708	0.057	990.0	560.0	2
Thiodigiycol (ug/g)							,	•
•	į	100	BDL	BDC	708	. A		
Thiodiglycol Chloroscetic scid	BOL	BDE	DOL	BOL	BOL	**	•	.

BDL - Below detection limit
MA - Not analyzed

• - Rrceeded laboratory holding time

Table CS-SP-9. Results of Pield Study. Page 15 of 24.

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			Tren	Trench CS03 (continued)	nued)			
	Boring 4	Boring 5		Boring 6			Boc	Bocing 7
Depth (feet) Geologic Material	11.5-12.5 Bilty Sand Trace Clay	11.5-12.5 Silty Sand W/Clay	11.5-12.5 Sand w/Clay/ Clayey Sandy Siltystone w/Gravel	15.5-16.5 Sandy Claystone	20.5-21.5 Sandy Claystone	25.5-26.5 Bandy Claystone w/811t	11.5-12.5 Bilty Band W/Clay	15.5-16.5 Sandy Siltstone w/Clay
Percent PinesVO	\$	45	5/50	06	08	70	45	9
AIR HOMITORING			•					
Volatile Organic Readings (ppm)								
BOM	BKD	BKD	12	11	2.0	1.5	0	0
OVAS	BKD	BKD	5.1	11.5	0.6	1.5	E	£
SOIL CHENISTRY								
Volatiles (ug/g)								
1 2-114-4100000	97	BDL	BDL	BDL	305	708	705	70
1.1.1.Trichloroethane)QE	308	BDL	BDL	708	BDL	102	202
1.1.2-Trichloroethane	308	708	BDL	B DL	BDL	108	305	
Dentene	306	308	BDL	BDL	708	305		
Bicycloheptadiene	BOL	BDL	BDC	305	30	305		
Carbon tetrachloride	m (108	305	30F			100	704
Chloroform	7	100	3 PO C		PDF.	708	702	708
Chlorobenzene	700	30 E	30£	308	108	308	BDL	JOE
Disconscinition of the	, G	305	108	BDL	BDL	708	100	108
Mithalbenesse	102	BDL	BDL	BDL	305	BDL	JOE.	102
	PO.	708	BDL	BDL	BDL	708	1 0 2	20
Methylene chloride	JON	BDL	JOS	BDC	BDL	108	108	70
Mathylinghotyl hatone	BDL	BDL	BDL	BDL	JQ8	1 02	108	300
or and brivians	108	308	BDL	BDL	B D[.	102	306	
Tetrachloroethylene	97	108	BDL	BDL	BDL	3 0£	102	
Toluene	308	305	BDL	BDL	R DL	102	709	702
Trichloroethylene	30g	BDL	305	BDL	305	102	706	702

BDL - Below detection limit
BKD - Background
NR - Bot recorded
S - As referenced to calibration standard of methane for OVA, and benzene for RWU; reading has been adjusted to account for background level
S - As referenced to calibration standard of methane for the nearest 5 percent

Table CS-SP-9. Results of Pield Study. Page 16 of 24.

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			Tren	Trench CS03 (continued)	(pen			
	Boring 4	Boring 5		Boring 6			Boring 7	7
Depth (feet)	11.5-12.5	11.5-12.5	11.5-12.5	15.5-16.5	20.5-21.5	25.5-26.5	11.5-12.5	15.5-16.5
SOIL CHEMISTRY (Continued)								
Semivolatiles (ug/g)								
Aldrin	BDL	BDL	BDL	BDL	BOL	BOC	708	B DC
Atrasine	JOH.	BDL	BDL	BDL	BDC	305	708	101
Chlorophenylmethyl sulfone	BDL	708	BDL	BDL	BDL	JOH	BOL	3 0£
Dibroschloropropane	B DL	BDL	708	3 DF	3 DF	BOL	702	706
Dichlorodiphenylethane	300	BOL	BDL	BDL	7 08	BDL	104	TOE
Dichlorodiphenyltrichloroethane	BDC	308	BDL	BOL	BDL	BOL	JON	709
Dicyclopentadiene		305	BDL	708	BDL	BDL	305	108
Dieldrin	-	3 DF	BDL	305	BDL	BOL	706	702
Hexach lorocyclopentadiene	2000	206	BDC	BOL	10 8	BDL	305	702
Isodrin	BOL	TO9	BDL	BDL	BOL	BDL	708	202
Parathion	TOE	DDL	BDL	BOL	BDL	708	JOE	702
gnbous	BOL	BDL	BDL	BOL	BDL	BDL	708	308
Dibromochloropropane (ug/g)	1	XX	¥¥	1	*	1	4	4
ICP Metals (ug/g)								
Cadetus	BDt	BDL	BDL	BDL	BDL	BDC	305	Boc
Chromium	15	14	74	BD 1.	BDL	702	12	12
Copper	7	38	19	34	33	9	22	33
Lead	22	708	308	BDL	BDL	TOT	705	702
Sinc	83	100	59	92	78	75	72	•
Arsenic (ug/g)	3.3	3.4	BDL	PDF	709	300	POL	3.5
Hercury (ug/g)	0.087	BOL	0.20	7QQ	300	708	BOL	JQE
Thiodiglycol (ug/q)						•		
Thiodialycol	MA*	MA.	708	BDL	BDL	BDL	701	HA.
Chloroscetic scid	MA•	•	. 708	BOL	BOL	708	TOR.	MA*

BDL - Below detection limit
NA - Not analyzed
- - Exceeded laboratory holding time

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Table (8-88-9. Reside of the contract	•	meanch real (continued)	(pend		Trench MKB 2		Trench	Trench MR 3
	Bort	Boring 7	Bor ing 8	Boring 1	Boring 2	Boring 3	Boring 1	Boring 3
Depth (feet) Geologic Material	20.5-21.5 Sandy Siltstone Trace Clay	25.5-26.5 Clayey Silty Sandstone	10.8 Silty Clayey Sand	5.9-6.8 Clayey Sand	5.7-6.5 Silty Sand W/Gravel	5.8-6.8 Silty Sand	8.7-9.5 Clayey Sand w/Gravel	9.6-9.9 Gravelly Sand
Percent PinesVO	55	20	30	20	\$	25	20	0
AIR HOMITORING								
Volatile Organic Readings (ppm)							-	
9088	BKD	BKD	BKD	06	90	5	30	97
OVAS	BKD	BKD	BKD	NR	£	E	•	ğ
Soil Cernstry								
Volatiles (ug/g)					;	í	4	4
1.2.nichloroethana	BDC	BDL	BDL	¥ :	Y 2	\$ \$	1 2	X
1.1.1-Trichloroethane	BDL	BOL	BOL	Y :	£ 3	€	¥	MA
1,1,2-Trichloroethane	308	108	708 807	¥ 2	Z Z	¥	K.	¥ :
Denzene	708	JQE I	מוני	¥ ¥	4	4	¥	4
Bicycloheptadiene	101	70,5	. TO A	× ×	MA	KA	X	Z :
Carbon tetrachloride	10E	BDL.	JOR JOR	N.	KY	\$:	£ :	4 3
Chloroform		30[BDL	NA NA	4	¥ :	£ 4	: 4
Chloropens ene	BDL	BDL	BDL	YN :	ž :	¥ 2	£ 2	M.
	BDL	BDL	BDL	¥ :	4 2	2	YN.	¥
Dicyclopenceurence	300	BOL	BDL	¥ :	£ 3	2	KN KN	4
	30 E	108	708	≨ :	ž á	2	*	M.
Mathylane chloride	308	BDL	708	¥ :	£ 3	2	**	£
Methyl (sobuty) ketone	305	Por	BDL	4 2	4		¥¥	KA
on and next and	BDL	BDL	BD£	≨ :		×	W.	4
Tetrachloroethylene	BOL	B DL	108	4 5	4 2	¥	4	¥
To livere	3OE	305	306		1	Y.	*	4
Trichloroethylene	BDI	BDL	BDE	¥.	¥.			

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BDL - Below detection limit
BKD - Background
MA - Mot analyzed
MR - Mot recorded
S - As referenced to calibration standard of methane for OVA, and benzene for HNU; reading has been adjusted to account for background level
S - As referenced to calibration standard of methane for OVA, and benzene for HNU; reading has been adjusted to account for background level
VD - As determined by visual observation and rounded to the nearest 5 percent

Table CS-SP-9. Results of Pield Study. Page 18 of 24.

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	Tr	Trench CS03 (continued)	:inued)		Trench MKB 2		Trench MKE	#KB 3
	Borin	ng 7	Boring 8	Boring 1	Boring 2	Boring 3	Boring 1	Boring 3
Depth (feet)	20.5-21.5	25.5-26.5	10.8	5.9-6.8	5.7-6.5	5.8-6.8	8.7-9.5	9.6-9.9
BOIL CERNISTRY (Continued)								
Semivolatiles (ug/q)								
Aldrin	BDL	BDL	BDL	100	100	100	100	100
Atrasine	BDL	BDL	BOL	BDL	BDL	10	•	PDF
Chlorophenylmethyl sulfone	708	305	BDL	305	Bot	30E	308	708
Dibromochloropropane	BDL	308	PDF	BDL	90	100		•
Dichlorodiphenylethane		308	BDL	BDL	BDL)Q 8	•	JOE
Dichlorodiphenyltrichloroethane	_	308	BDL	30	7	20	30	708
Dicyclopentadiene	BOL	BOL	3 0f	BDL	305	JOE .	305	708
Dieldrin	708	3 DF	BDE	20	01	٠ ۾	100	70
Rexachlorocyclopentadiene	B D£	708	708	30	-	BDC	Bot	305
Isodrin	BDL	BDL	BDL	30	20	30	30	30
Parathion	7 08	BDL	BDL	BDL	20	TQ1	BDC	30 f
euodng	BDL	BDL	BDL	30	BDL	90	•	7
Dibromochloropropane (ug/q)	£	¥.	YN	32000	370	0069	98	13
ICP Metals (ug/g)								
Cadmium	BDC	BDL	BDL	4.2	5.8	8.8	3.1	2.8
Chromium	BOL	11	11	9.7	11	9.8	9.7	11
Copper	33	28	11	55	1500	78	18	22
Lead	BDL	BDL	BDL	73	88	38	24	708
Inc	7.1	96	45	98	120	230	38	8 3
Arsenic (ug/g)	7.1	BDL	3.6	140	190	130	150	P DF
Mercury (ug/g)	BOL	708	BDL	2.3	1.0	4.7	0.58	0.27
Thiodiglycol (ug/q)								
Thiodiglycol	MA*	NA*	BDL	NA.	N.	HA	1	1
Chloroacetic acid	. KN	NA.	BDL	NA	NA	\$	W.	11

BDL - Below detection limit
NA - Not analyzed

• - Exceeded laboratory holding time

Table CS-SP-9. Results of Field Study. Page 19 of 24.

		Trench HAE 4			A during the s	
	Boring 2	Boring 3	Boring 5	Boring 1	Boring 2	Boring 3
Depth (feet) Geologic Material	7.7-8.2 Clayey Silty Sand	7.7-8.2 Clayey Silty Sand	7.6-7.9 Silty Sand w/Clay	8.2-8.8 Claystone	8.2-9.2 Claystone	8.6-9.2 Silty Claystone
Percent PinesVO	07	40	30	90	100	100
AIR HOHITORING						
Volatile Organic Readings (ppm)			•			
BINGS	20	20	•	90	78	25
OVAS	Æ	XX	M.	æ	Ĕ	Ē
SOIL CHEMISTRY						
Volatiles (ug/g)						
1,2-Dichloroethane	\$	М	NA	K.	NA V	NA
1,1,1-Trichloroethane	¥	MA	N	XX.	¥	K
1,1,2-Trichloroethane	2	KY.	Y.	NA NA	Y.	¥
Benzene	¥.	KA	Y.	NA.	≨	X.
Bicycloheptadiene	≨	KN KN	MA	Y.	KN KN	*
Carbon tetrachloride	KA	NA	Y.	Y.	*	¥.
Chloroform	Y.	MA	≨	NA NA	Y.	≨
Chlorobenzene	¥	Y.	¥	ž	2	A)
Dibromochloropropane	¥.	Y.	4	¥	Y.	X
Dicyclopentadiene	KY.	Y.	Y.	¥	¥	¥
St hy 1 bensene	M	¥	¥	¥	Y.	*
m-Xylene	KN.	¥	¥	¥	M	4
Methylene chloride	KN	HA	¥	NA	Y.	KA K
Methylisobutyl ketone	NA	MA	Y.	4 X	¥	¥¥
o- and p-kylene	¥	¥¥	¥.	K.	¥	4
Tetrachloroethylene	¥.	MA	N.	NA.	ş	YY.
Toluene	¥	¥	NA	XX	¥	≨
Trichloroethylene	77	¥.	4 2	MA	47	4

NA - Not analyzed
NR - Not recorded
S - As referenced to calibration standard of methane for CVA, and benzene for HNU; reading has been adjusted to account for background level
S - As referenced to calibration standard of methane for CVA, and benzene for HNU; reading has been adjusted to account for background level
VO - As determined by visual observation and rounded to the nearest 5 percent

Table CS-SP-9. Results of Field Study. Page 20 of 24.

		Trench MKE 4			Trench MKE 6	
	Boring 2	Boring 3	Boring 4	Boring 1	Boring 2	Boring 3
Depth (feet)	7.7-8.2	7.7-8.2	7.6-7.9	8.2-8.8	8.2-9.2	8.6-9.2
SOIL CHEMISTRY (Continued)						
Semivolatiles (ug/g)						
Aldrin	BDL	20	20	200	300	009
Atrasine	BDL	BDL	206	BDL	108	700
Chlorophenylmethyl sulfone	709	BDL	BDL	BDC	BDL	JOH
Dibromochloropropane	200	20	20	300	100	50
Dichlorodiphenylethane	9.0	2	708	7	BDL	PDF
Dichlorodiphenyltrichloroethane	10	•	30	BDL	TQ1	BDL
Dicyclopentadiene	308	208	BDL	BDL	BDL	708
Dieldrin	30	9	2	BDL	Q	91
Rezachlorocyclopentadiene	20	306	20	BDL	B DL	JOS
Isodrin	\$	7	~	20	70	9
Parathion	JOE	305	BDE	BDL	JOE	BDL
Supons	20	7	3 0 £	•	708	700
Dibromochloropropane (ug/g)	240	70	99	0**	260	55
ICP Metals (ug/g)						
Cadatus	5,3	7.7	9.9	71	27	6,3
Chromites	708	BDL	708	21	. 8	1
Copper	36	42	32	150	37	13
Lead	708	BDL	BDL	97	35	17
Sinc	90	100	72	480	100	190
Arsenic (ug/g)	120	150	170	740	600	250
Hercury (ug/g)	0.092	0.39	2.2	9.8	3.4	1.6
Thiodigiycol (ug/q)						
Thiodigiyeol Chloroacetic acid	NA NA	N N	N N N	NA NA	¥	. \$2

BDL - Below detection limit MA - Mot analyzed

Table CS-SP-9. Results of Pield Study. Page 21 of 24.

		Trench MKE 7	7		ALENCH HAS 42	
	Boring 1	Boring 2	Boring 3	Boring 1	Boring 2	Boring 3
Depth (feet) Geologic Material	5.7-6.4 Clayey Silty Sand	5.7-6.7 Silty Sand	5.8-6.5 Clayey Silty Sand	3.6-4.4 Sandy Clay	3.6-4.6 Silty Clay	3.4-4.2 Sandy Silty Clay
Percent PinesVO	20	40	30	09	0.8	20
AIR MONITORING			•			
Voletile Organic Readings (Dpm)						
9046	BKD	BKD	BKD	BKD	BK D	0
OVAS	Ę	£	*	*	Ē	ž
SOIL CHENISTRY						
Volatiles (ug/g)						
1.2-Dichloroethane	K	KA	MA	¥	YM:	\$:
1.1.1-Trichloroethane	K)	NA NA	ź	Y.	\$:	¥ :
1,1,2-Trichloroethane	¥	MA	¥	¥2 :	≨ :	E :
Dentere	4	Y.	~	¥ :	S :	£ 5
Bicycloheptadiene	¥	K	YN:	\$;	S 3	£ 4
Carbon tetrachloride	⊈	× i	Ž :	¥ :	5 3	¥ 4
Chloroform	\$	¥ :	≨ :	£ 2	£ 3	.
Chlorobenzene	4	¥ :	¥ :	S 4	E 2	4
Dibromochloropropane	Y :	ž:	¥ a	€ ≴	.	Ž
Dicyclopentadiene	£ 2	¥ 2	*	NA.	KN	K
st hy Ibensene	£ 3	4	*	K.	≨	4
	§ 3	42	*	\$	¥	4
Hethylene chloride		1	X	*	W.	¥
Methyllsobutyl Ketone	£ 9	1 2	2	*	K	\$
o- and p-Xylene	¥ ;			4	\$	*
Tetrachloroethylene	¥ :	£ 3	Ę a	4	1	¥
Toluene	S			TN	2	₹
Tries Jornathy ene	4	4	5	•		

BKD - Background MA - Not analyzed MR - Not recorded S - As referenced to calibration standard of methane for OVA, and benzene for HMU; reading has been adjusted to account for background level S - As referenced to calibration standard of methane for OVA, and benzene for HMU; reading has been adjusted to

Table CS-SP-9. Results of Field Study. Page 22 of 24.

		Trench MKB 7	7		Trench MKE 19	
	Boring 1	Boring 2	Boring 3	Boring 1	Boring 2	Boring 3
Depth (feet)	5.7-6.4	5.7-6.7	5.8-6.5	3.6-4.4	3.6-4.6	3.4-4.2
SOIL CHEMISTRY (Continued)						
Semivolatiles (ug/g)						
Aldrin	BDL	BDC	BDL	BDL	BDL	PDT
Atrazine	BOL	JQ8	BDL	308	BDL	BDL
Chlorophenylmethyl sulfone	BDL	BDL	BDL	BDL	BDL	TON
Dibromochloropropane	BDL	BDL	BDL	BDL	BDL	BDL
Dichlorodiphenylethane	BDL	BDC	But	BDL	30 0	BDL
Dichlorodiphenyltrichloroethane		BDL	BOC	708	BDC	BDI
Dicyclopentadiene		BDL	BDL	BDL	30£	BDL
Dieldrin	BDL	BDL	3 D[BDL	BDL	BDL
Rexachlorocyclopentadiene	BDL	3DC	BDL	708	BDL	BDL
Isodrin	BDC	BDL	BDL	BDL	BDL	BDL
Parathion	BOL	BDL	BOL	BDL	BDL	708
Supons	BDL	BDL	BDL	BDL	TO8	BDL
Dibromochloropropane (uq/q)	¥.	XX	42	W	¥	¥¥
ICP Metals (ug/q)						
	.TCa	708	EDI.	ĵ.	RDÍ.	BD.
			3 4	17	20.E	
Copper	3 =	13	16	: 1	=	=
peer	19	*	15	13	BDL	TOR
1 inc	6+	48	57	97	95	82
Arsenic (ug/g)	BDL	BDL	BDL	7.1	5.1	=
Mercury (ug/g)	BDL	BDL	BDL	3.5	0.18	5.4
Thiodiglycol (ug/g)						
Thiodiglycol	¥	Y.	NA :	YN:	Y.	E.
Chloroacetic acid	Y X	Y _N	Y.	Y Z	Š.	Y.

BDL - Below detection limit NA - Not analyzed

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Table C8-8P-9. Results of Pield Study. Page 23 of 24,

...

		TE ENCH MAK 20		Trench	Trench MKE 21
	Boring 1	Boring 2	Boring 3	Boring 1	Boring 2
Depth (reet) Geologic Material	4.2-4.8 Bandy Clay	4.0-4.5 Clayey Sand	4.1-5.0 Sandy Clay	8.0-9.0 Clayey Sand/ Sandy Clay	7.8-9.0 Sandy Clay
Percent PinesVO	20	45	09	40/70	8
AIR HONITORING					
Volatile Organic Readings (ppm)	(ad				
8DMB	1.0	BKD	BKD	BKD	970
OVAS	MR	æ	X.	MR	ž
SOIL CHENISTRY					
Volatiles (ug/g)					
1,2-Dichloroethane	W	Y.	NA	W	4
1,1,1-Trichloroethane	NA	NA VA	NA.	4	2
1,1,2-Trichloroethane	Z.	KA	MA	MA	MA
Densere	MA	MA	MA	KN	¥
Bicycloheptadiene	Z :	MA	KA.	NA	Y.
Carbon tetrachloride	£ 1	Y 2	NA ::	YN :	X
Chlorobenzene	£ 2	¥ 2		¥ :	Y.
Dibromochloropropane	2	YN YN	¥ \$	¥ X	¥ 2
Dicyclopentadiene	NA	Y.	NA	€ ≨	2
Bthylbenzene	ź	YY.	NA	W.	2
B-Xylene	KN	W.	KN	××	Z.
Methylene chloride	NA.	¥	MA	KY	× ×
Methylisobutyl ketone	\$	Z.	KA	MA	Ž
o- and p-xylene	NA	¥	Z.	W	× ×
Tetrachloroethylene	\$	Y 2	KX	×	MA
Toluene	1	NA.	NA	¥	NA
Trichloroethylene	MA	Y.	N.	MA	X

Site CS-SP 4936A/1052A Rev. 7/01/88

BKD - Background
NA - Not analyzed
NR - Not analyzed
NR - Wor recorded
S - As referenced to calibration standard of methane for OVA, and benzene for HNU; reading has been adjusted to account for background lavel
VO - As determined by visual observation and rounded to the nearest 5 percent

24.
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Study.
Pield
7
Results
CS-8P-9.
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		Trench MKB 20		Trench MKB 21	KK 21
	Boring 1	Boring 2	Boring 3	Boring 1	Boring 2
Depth (feet)	4.2-4.8	4.0-4.5	4.1-5.0	8.0-9.0	7.8-9.0
SOIL CHEMISTRY (Continued)					
Semivolatiles (ug/g)					
471400	9.0	BDL	708	BDE	JOR
Aldrin		BDL	305	708	308
Attasine	i de	BDL	BDL	3 0f.	700
Caloropidizations	9.0	B D(708	306	708
Pichlorodinhanylethane	TOE	BDL	BOL	708	705
Michael Carpinent Leanning		BDL	Jaa	BOL	308
Dich Lord Section of Land Control Control		BDL	BDL	JOS	708
Dicyclopentalane		PDF	0.3	308	BDL
Dieldrin		108	BDL	BDL	708
Herachlorocyclopencaulene		Jos.	BDL	BDL	108
I sodrin		E C	BDL	BDL	. 28
Parathion		HDT.	BDL	BDL	306
Bupons					
Dibromochloropropene (ug/g)	NA	NA NA	KN	Ç.	××
ICP Metals (ug/g)					
	2	PD.	BDC	BOC	108
Cadaius	77	ani.	18	13	14
Chronium	•	0 00	2	19	11
Copper		52	26	28	7.8
zinc zinc	150	160	160	8 9	2
Arsenic (ug/g)	4.4	708	3.4	306	BDL
Nercury (ug/g)	0.17	708	0.13	708	BOL
Thirdialycol (us/s)					
		•	4	4	4
Thiodigiyes! Chloroscetic scid	K K K	A W	Y Y	.	¥.

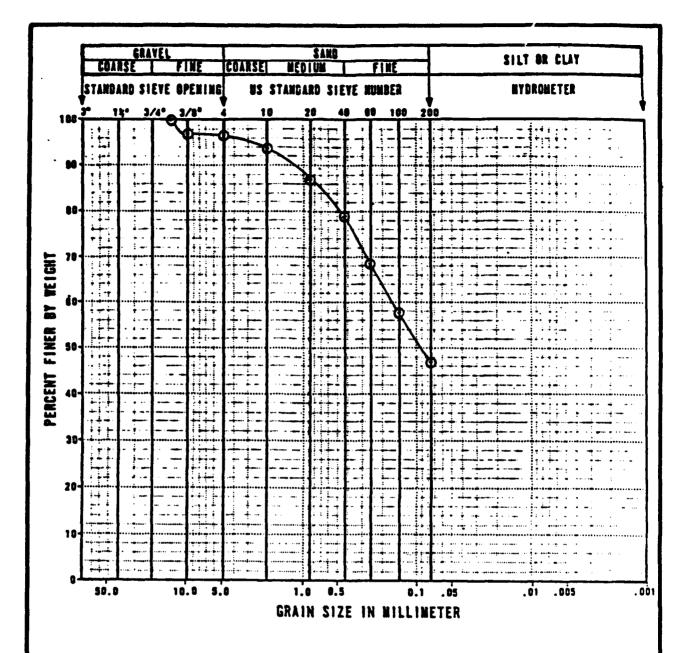
BDL - Below detection limit NA - Not analysed

Site CS-SP 4936A/1052A

Table CS-SP-10. Summary of Soil Properties, Indexes and Harvard Miniature Compaction Test. Page 1 of 1.

Trench No.	Boring No.	Depth (ft)	Fluid Content, %	Dry Density, Pounds per Cubic Foot	Compacted Fluid Content, X	Compacted Dry Density, Pounds per Cubic Foot
1001CS01	12	3.6-4.0	25.5	79.0	26.5	60
10010301	12	4.0-5.0	23.0	87.5	23.0	&
1001CS02	6	7.2-7.8	31.0	75.0	38.0	76
1001CS02	•	7.8-8.8	26.5	87.5	30.0	8 9
1002CS03	6	11.2-11.8	13.5	106.0	17.5	108
1002CS03	10	11.8-12.3	27.5	89.8	32.5	85
1002CS03	11	10.8-11.5	30.0	0.06	29.0	91
11026503	12	11.5-12.5	35.0	85.0	32.5	80
1001MKE02	Physical	5.3-6.1	24.0	78.0	22.5	80
1001MKB03	Physical	8.5-9.3	15.5	100.0	21.5	102
1001PKE04	Physical	7.0-8.0	22.0	87.0	23.0	91
1001MKE06	Physical	7.5-8.5	34.5	79.0	33.0	79
1035HKE07	Physical	5.5-6.3	11.5	100.5	10.5	112
1001MKE19	Physical	3.4-4.2	28.5	82.0	27.5	93
1001MKB20	Physical	3.9-4.5	23.0	89.0	22.5	
1002MKR21	Physical	7.5-8.3	21.0	95.0	18.0	107

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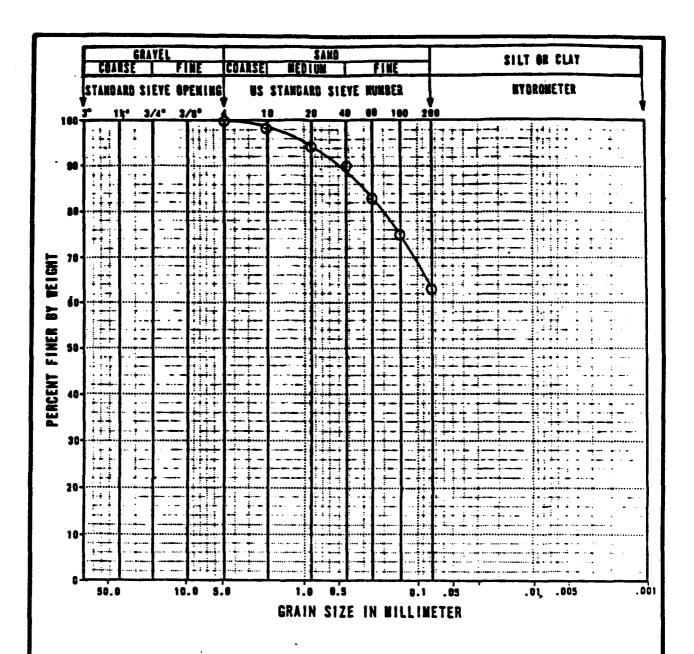
Source: The Earth Technology Corporation, 1987a

Prepared for:

Program Manager's Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground, Maryland

Drafted: 10/15/87

FIGURE CS-SP-5a
Grain Size Distribution Curve
Boring 12, 3.6-4.0 ft., Trench CSOI,
Section 1
Rocky Mountain Arsenal, Task 10
Prepared by Ebasco Services Incorporated



Source: The Earth Technology Corporation, 1987 a

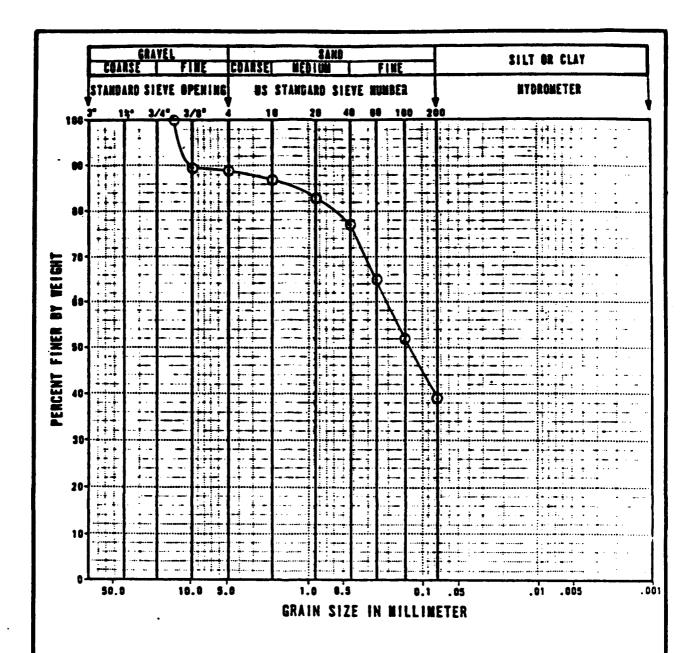
Prepared for:

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Drafted: 10/16/87

FIGURE CS-SP-5b
Grain Size Distribution Curve Boring 12,
4.0-5.0 ft., Trench CSOI,
Section I
Rocky Mountain Arsenal, Task 10

Prepared by: Ebasco Services Incorporated



Source: The Earth Technology Corporation, 1987a

Prepared for:

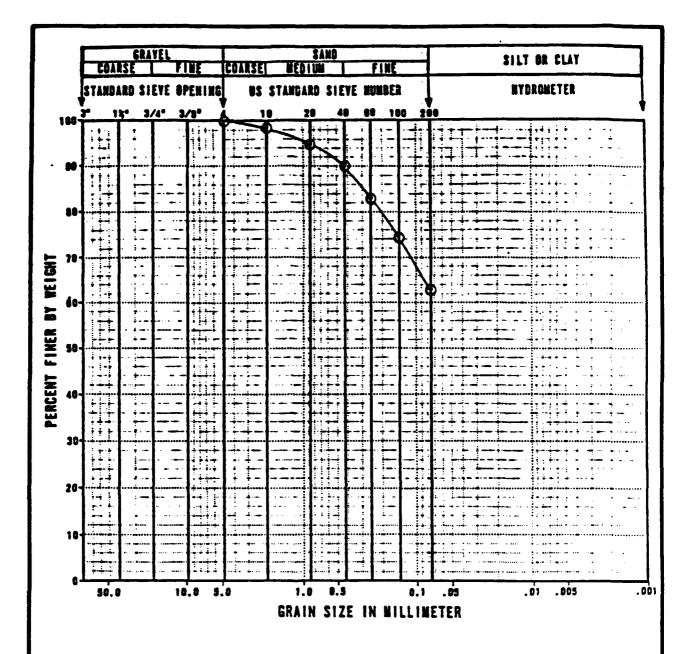
Program Manager's Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground, Maryland Drafted : 10/16/87 FIGURE CS-SP-5c

Grain Size Distribution Curve

Boring 9, 7.2 - 7.8 ft., Trench CSO2,

Section I

Rocky Mountain Arsenal, Task 10



Source: The Earth Technology Corporation, 1987 a

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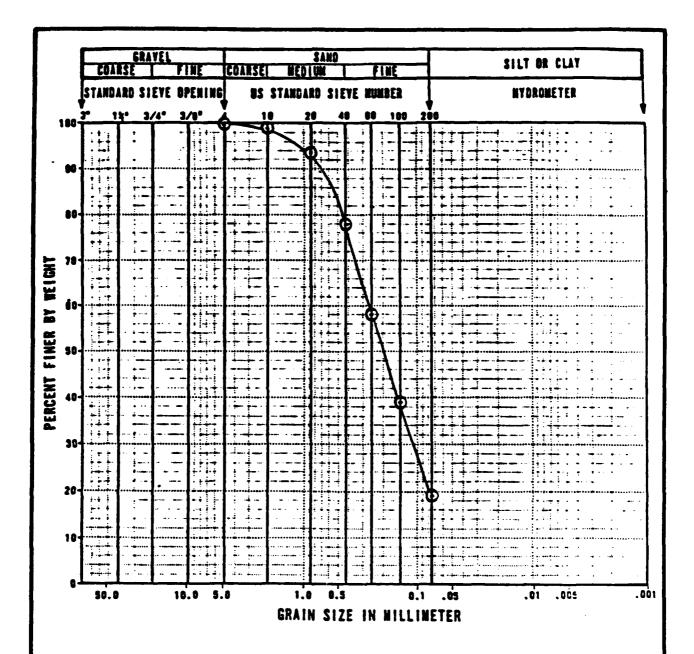
FIGURE CS-SP-5d

Grain Size Distribution Curve

Boring 9, 7.8-8.8 ft., Trench CSO2,
Section 1

Rocky Mountain Arsenal, Task 10

Prepared by: Ebasco Services Incorporated

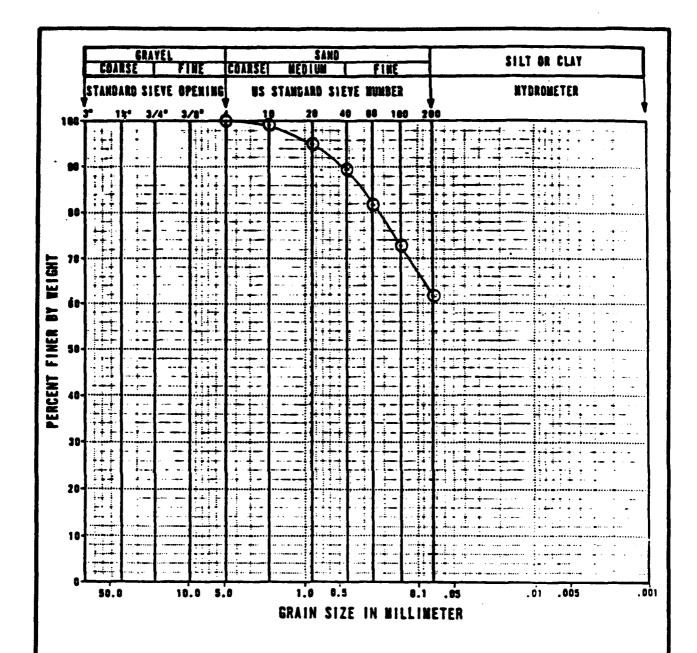


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FIGURE CS-SP-5e
Grain Size Distribution Curve
Boring 9, II.2-II.8 ft., Trench CSO3,
Section 2
Rocky Mountain Arsenal, Task 10



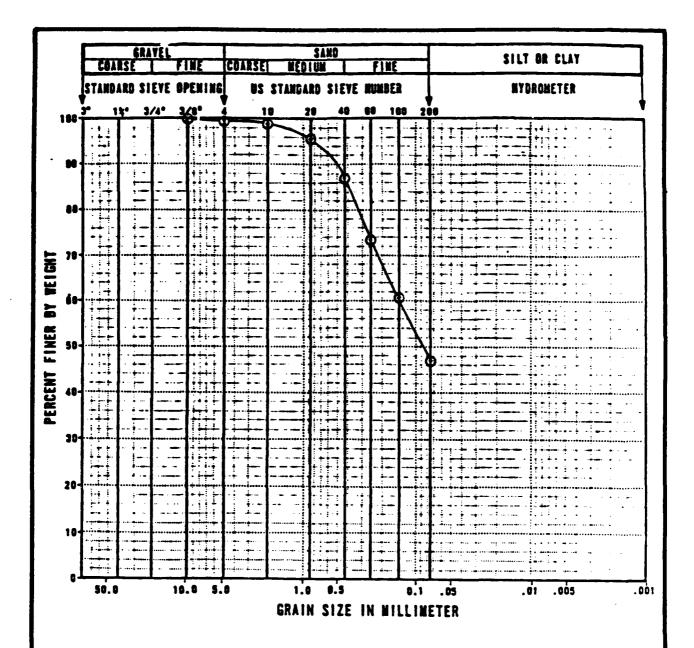
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FIGURE CS-SP-51

Grain Size Distribution Curve Boring 10, 11.8-12.3 ft., Trench CSO3, Section 2 Rocky Mountain Arsenal, Task 10

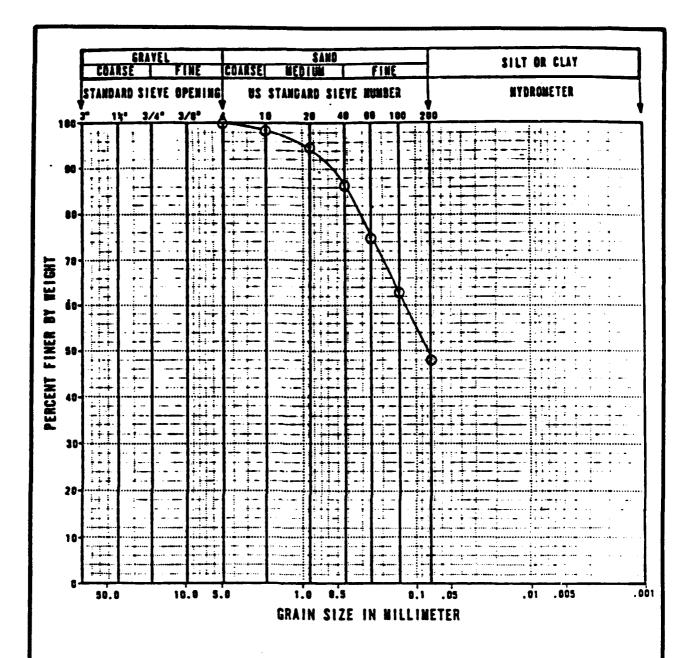


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FIGURE CS-SP-5g
Grain Size Distribution Curve
Boring II, IO.8 - II.5 ft.,
Trench CSO3, Section 2
Rocky Mountain Arsenal, Task IO

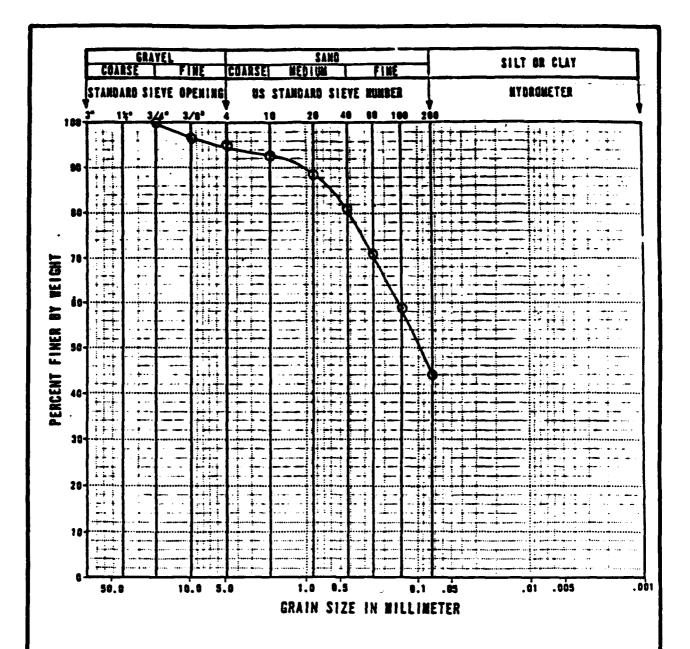


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FIGURE CS-SP-5h
Grain Size Distribution Curve
Boring 12, 11.5 - 12.5 ft.,
Trench CSO3, Section 2
Rocky Mountain Arsenal, Task 10

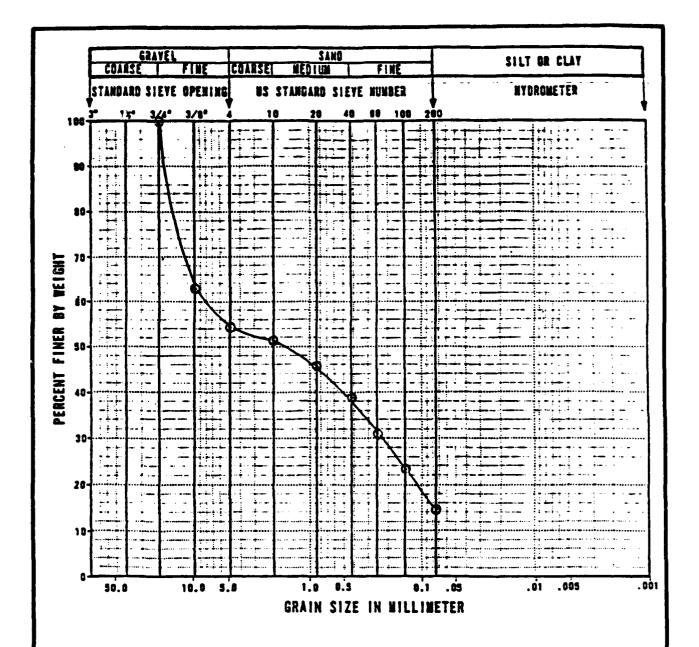


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FIGURE CS-SP-51
Grain Size Distribution Curve
Physical Sample, 5.3-6.1 ft.,
Trench MKE 2, Section 1
Rocky Mountain Arsenal, Task 10

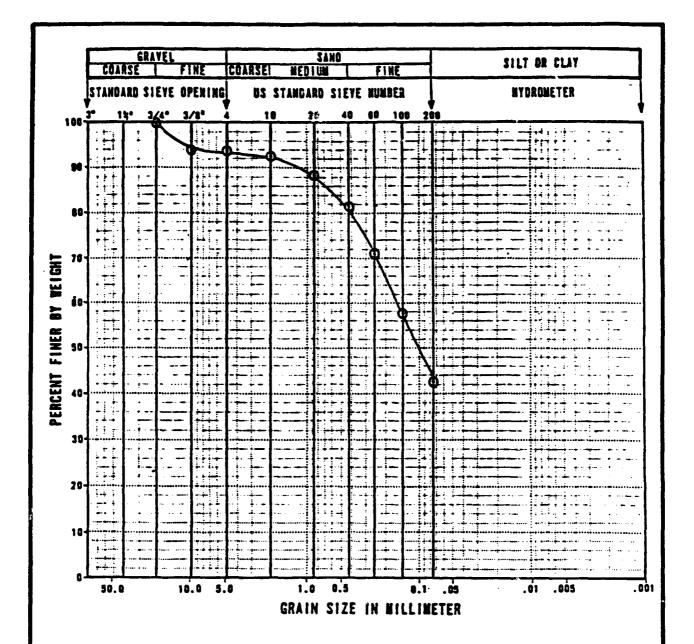


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FIGURE CS-SP-5j Grain Size Distribution Curve Physical Sample, 8.5-9.3 ft., Trench MKE 3, Section I Rocky Mountain Arsenal, Task 10

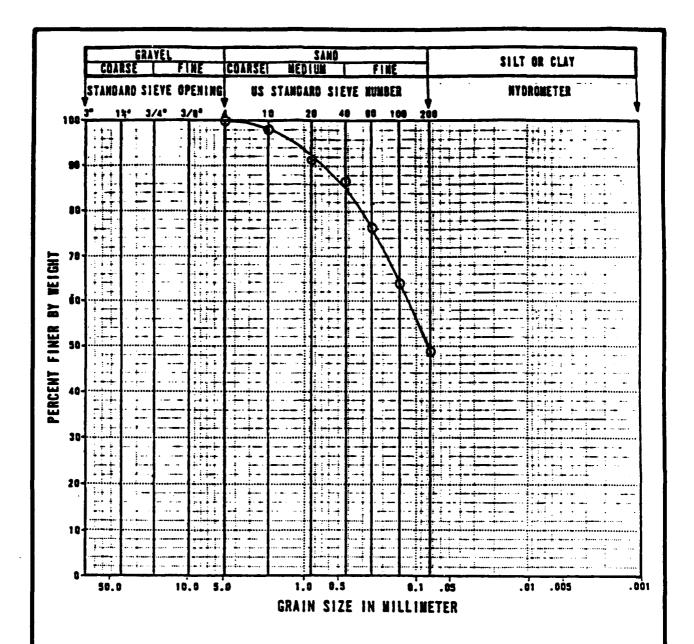


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FIGURE CS-SP-5k
Grain Size Distribution Curve
Physical Sample, 7.0-8.0ft.
Trench MKE 4, Section I
Rocky Mountain Arsenal, Task 10

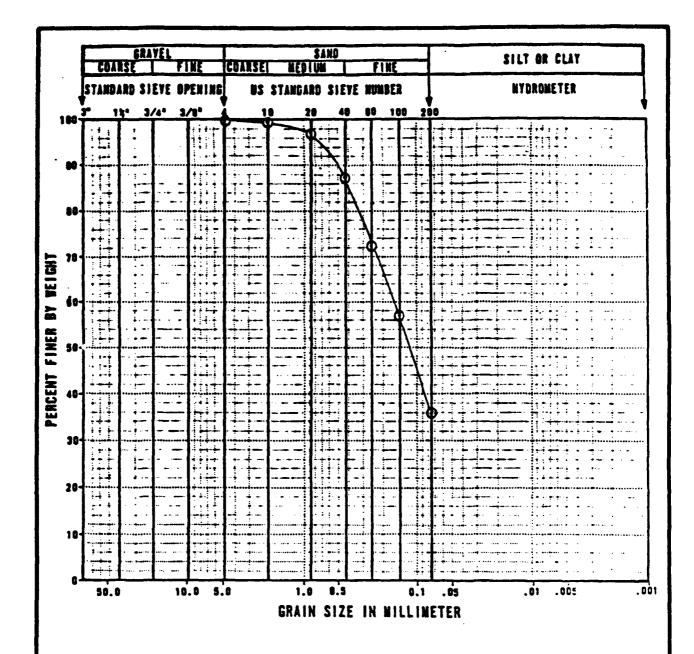


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FIGURE CS-SP-5!
Grain Size Distribution Curve
Physical Sample, 7.5-8.5 ft.,
Trench MKE 6, Section I
Rocky Mountain Arsenal, Task 10

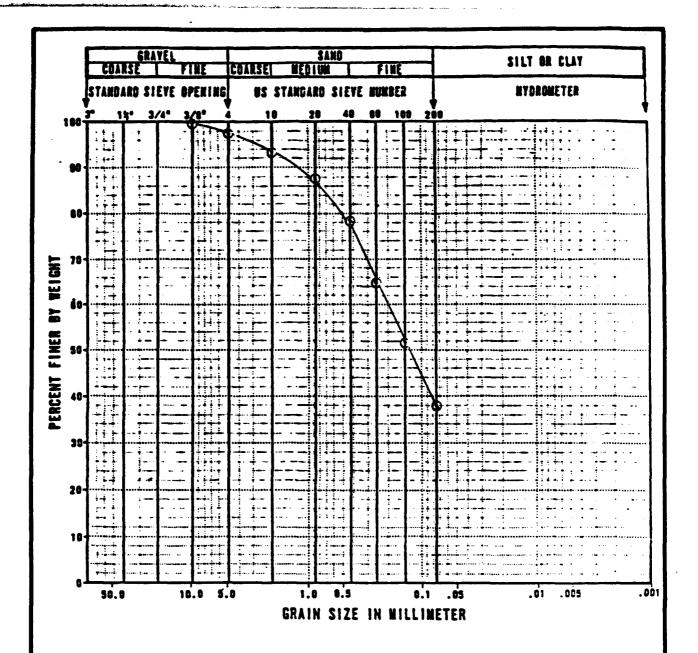


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FIGURE CS-SP-5m Grain Size Distribution Curve Physical Sample, 5.5-6.3 ft., Trench MKE 7, Section 35 Rocky Mountain Arsenal, Task 10

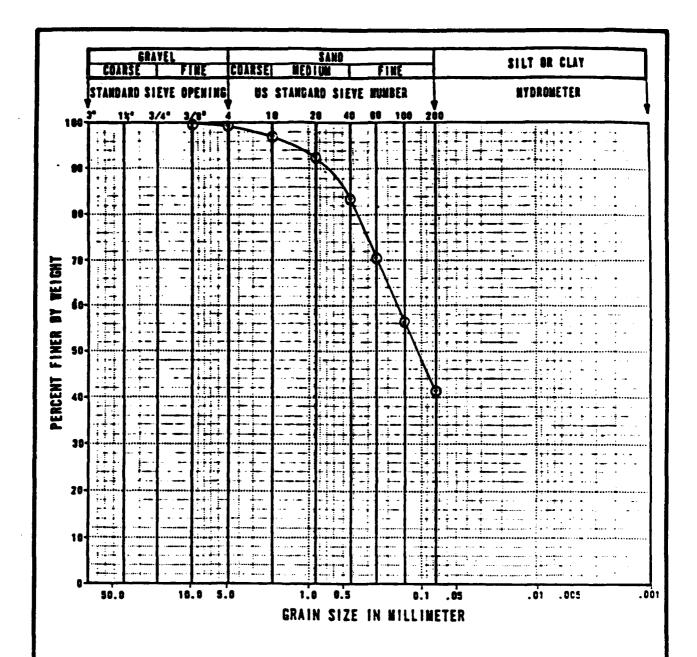


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FIGURE CS-SP-5n
Grain Size Distribution Curve
Physical Sample, 3.4 - 4.2 ft.
Trench MKE 19, Section I
Rocky Mountain Arsenal, Task 10

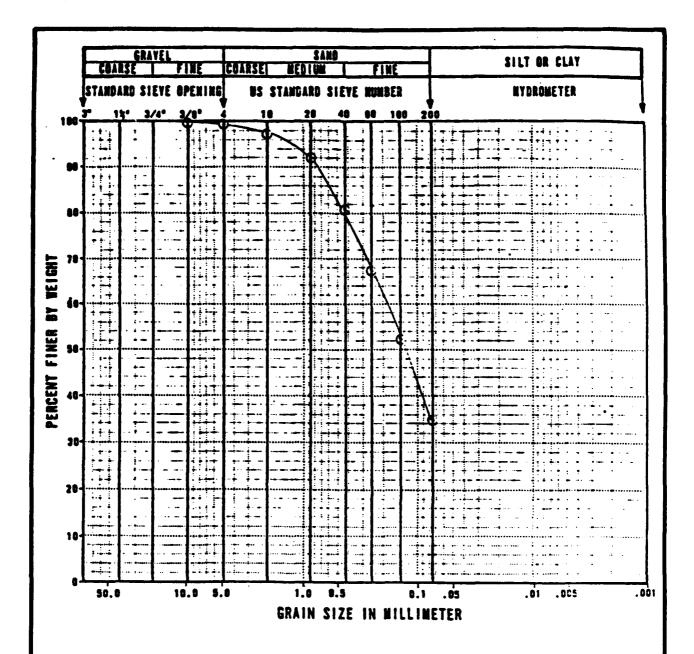


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FIGURE CS-SP-50
Grain Size Distribution Curve
Physical Sample, 3.9-4.5 ft.,
Trench MKE 20, Section 1
Rocky Mountain Arsenal, Task 10

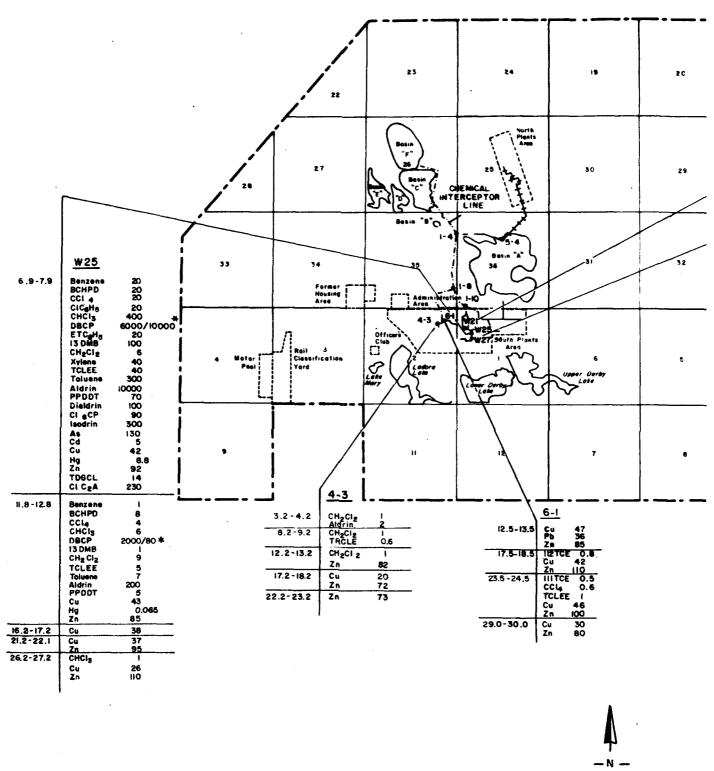


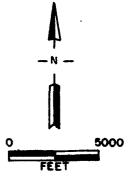
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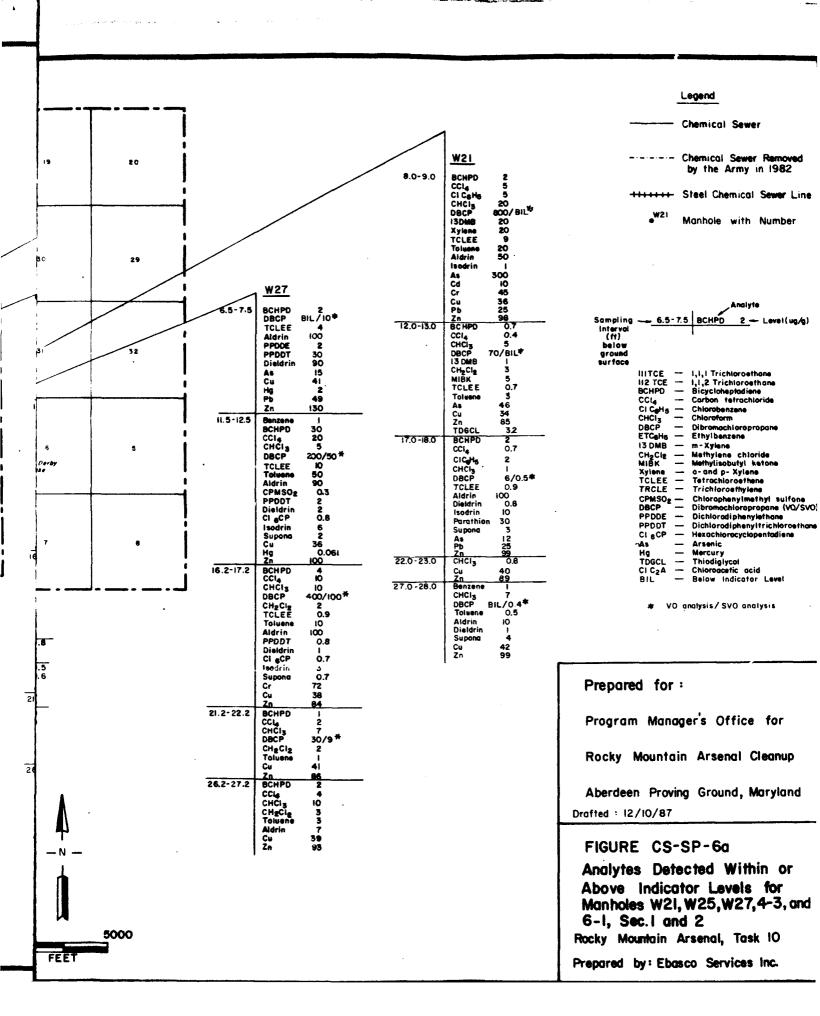
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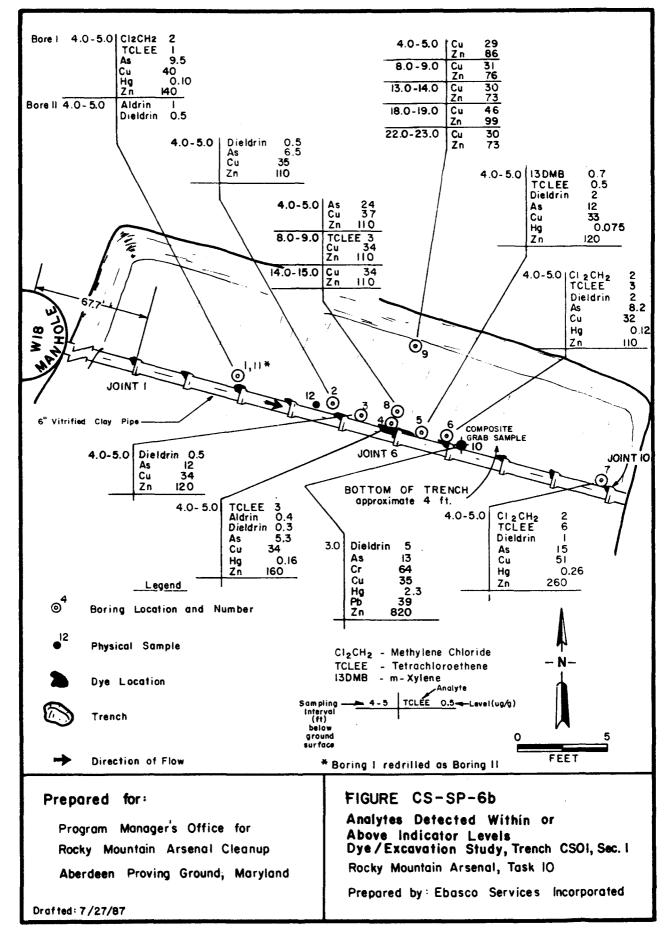
Drafted: 10/20/87

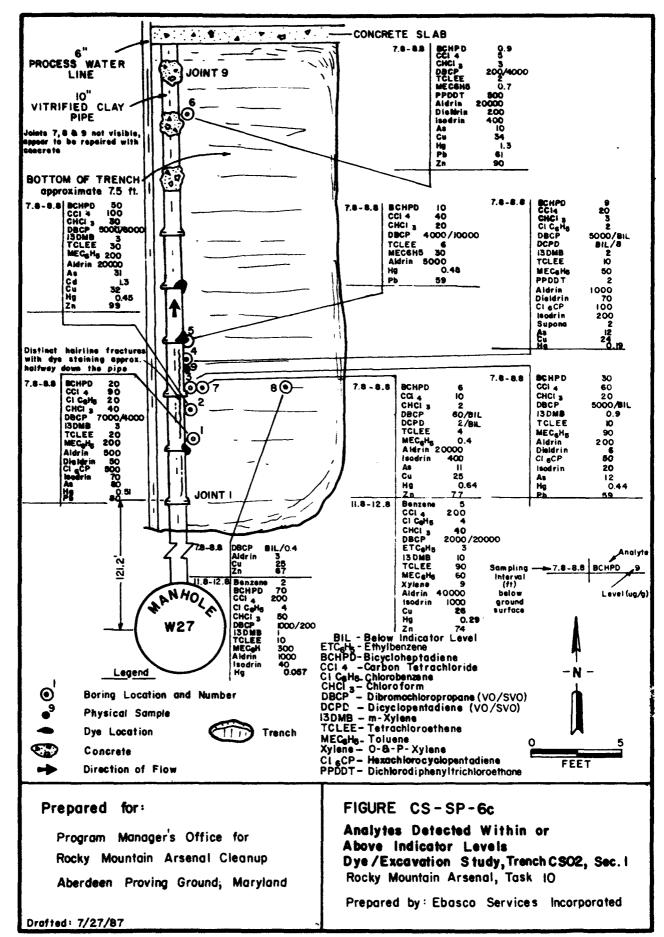
FIGURE CS-SP-5p
Grain Size Distribution Curve
Physical Sample, 7.5 - 8.3 ft.,
Trench MKE 21, Section 2
Rocky Mountain Arsenal, Task 10



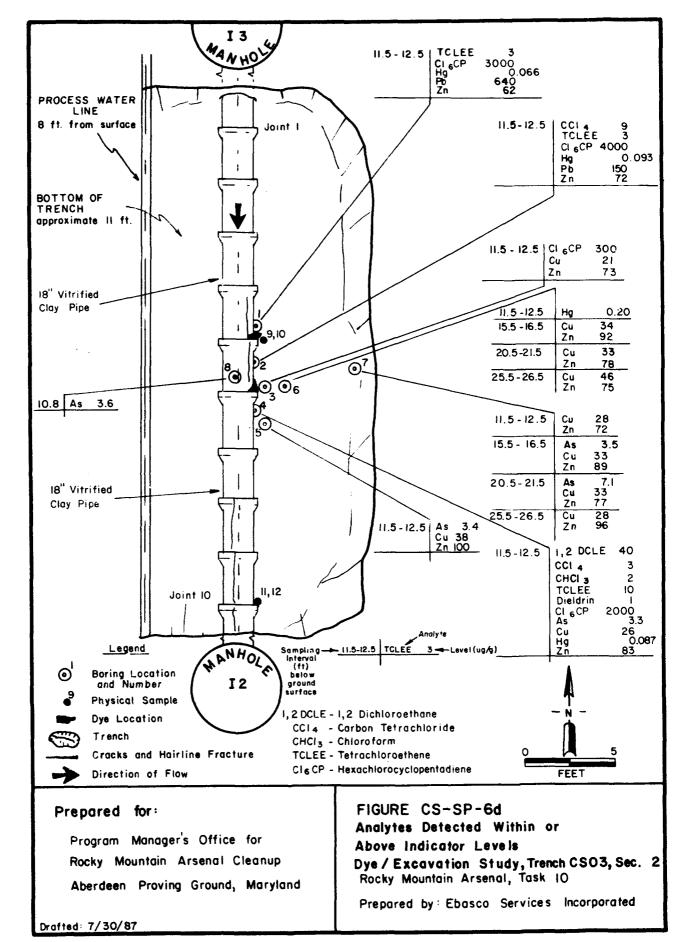


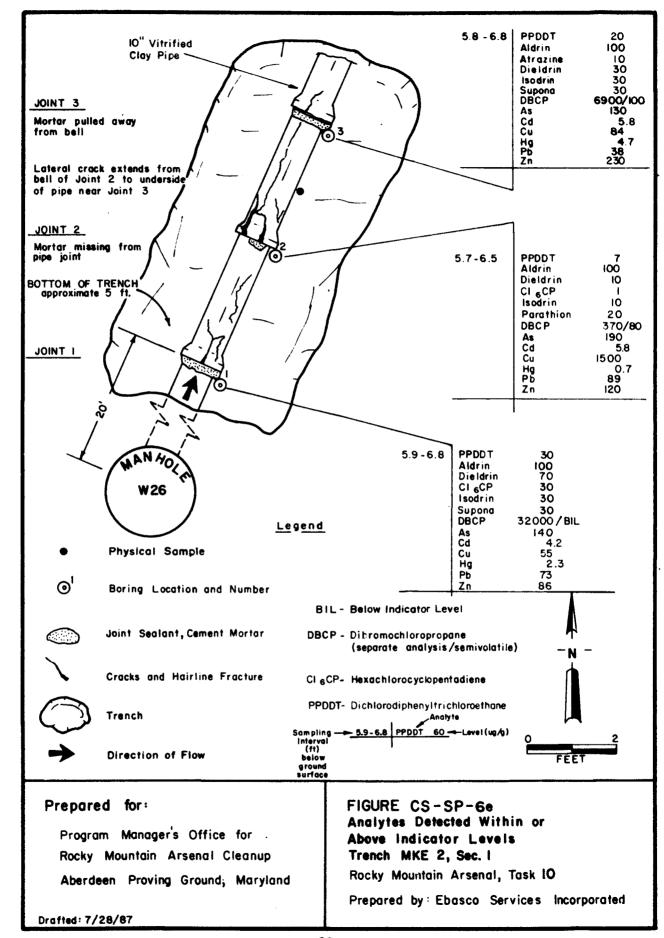


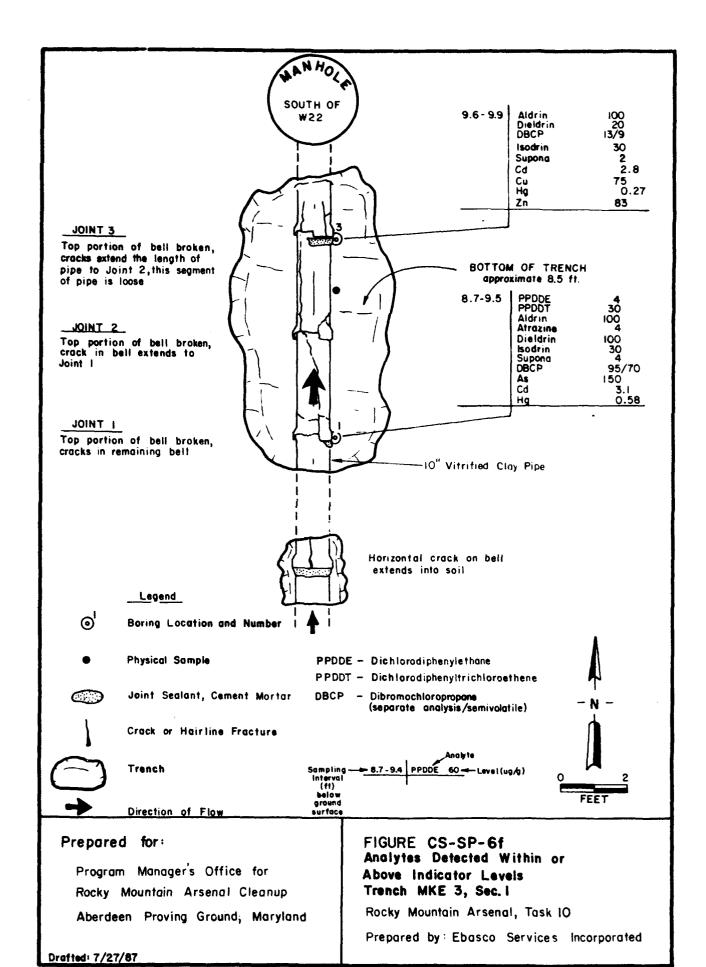


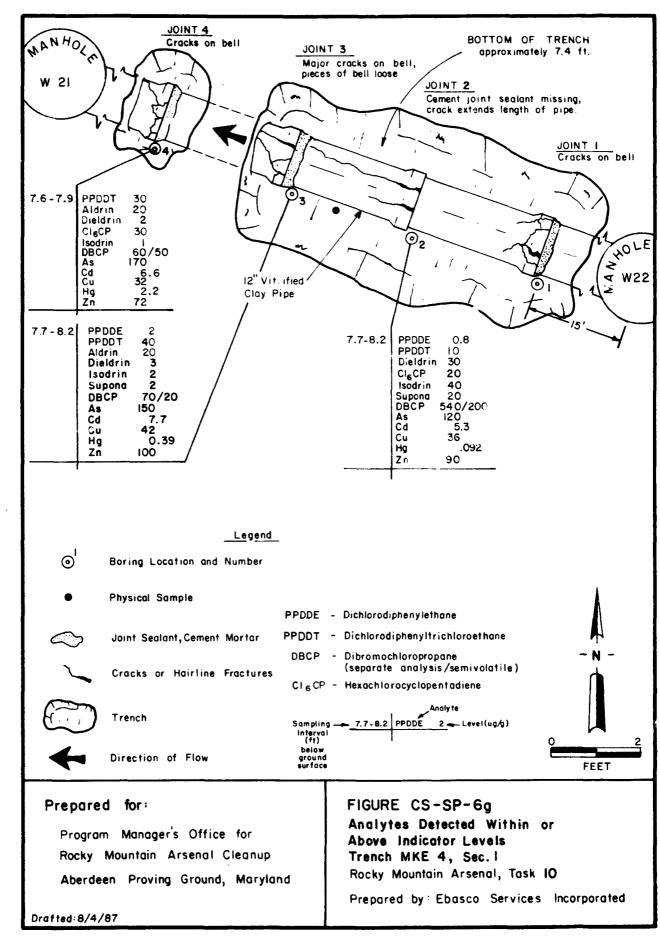


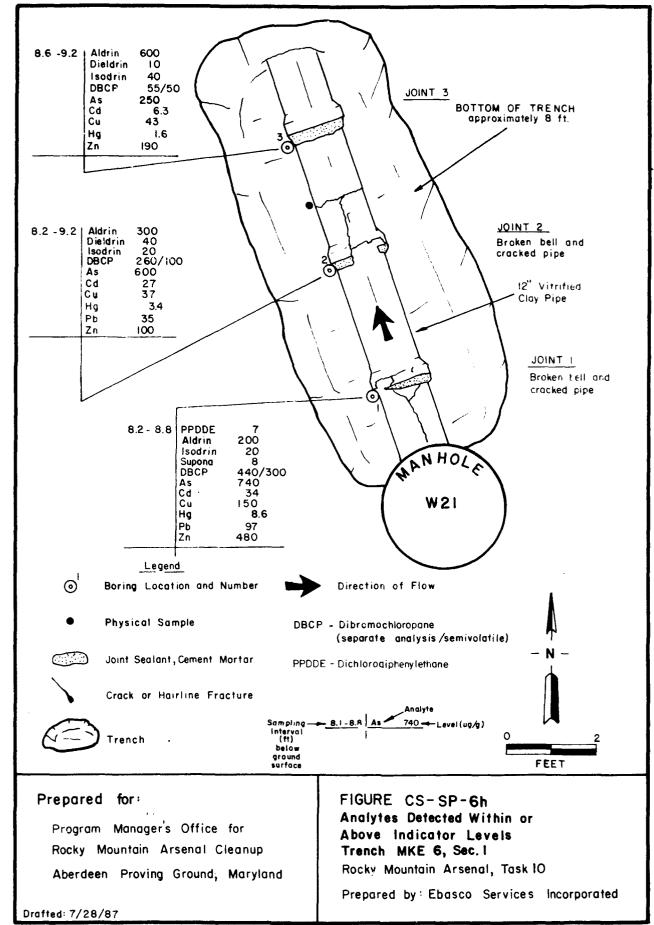
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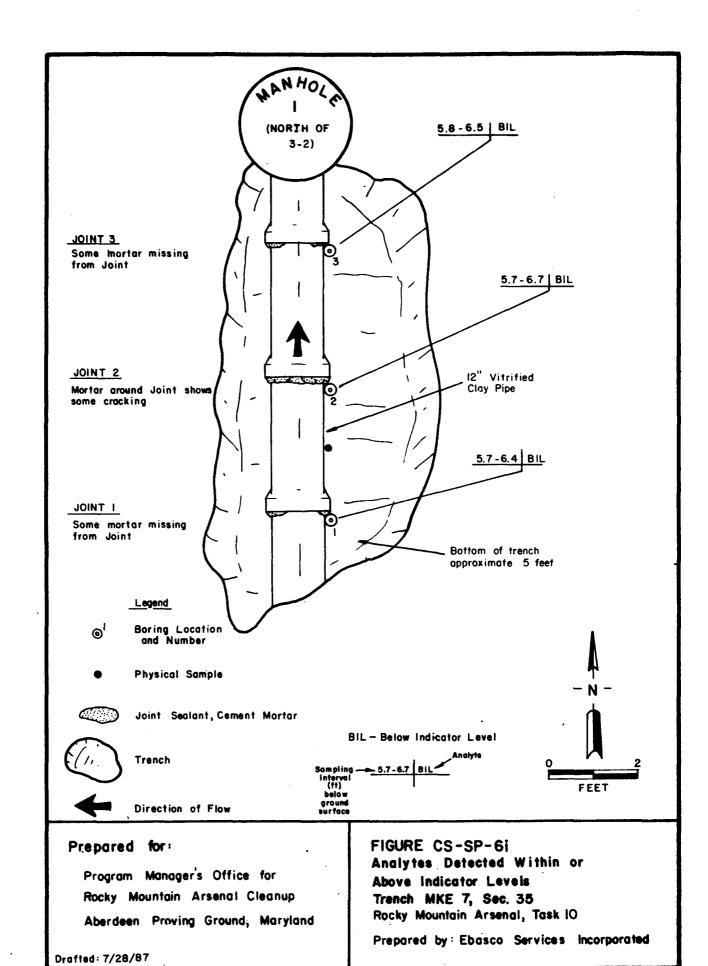


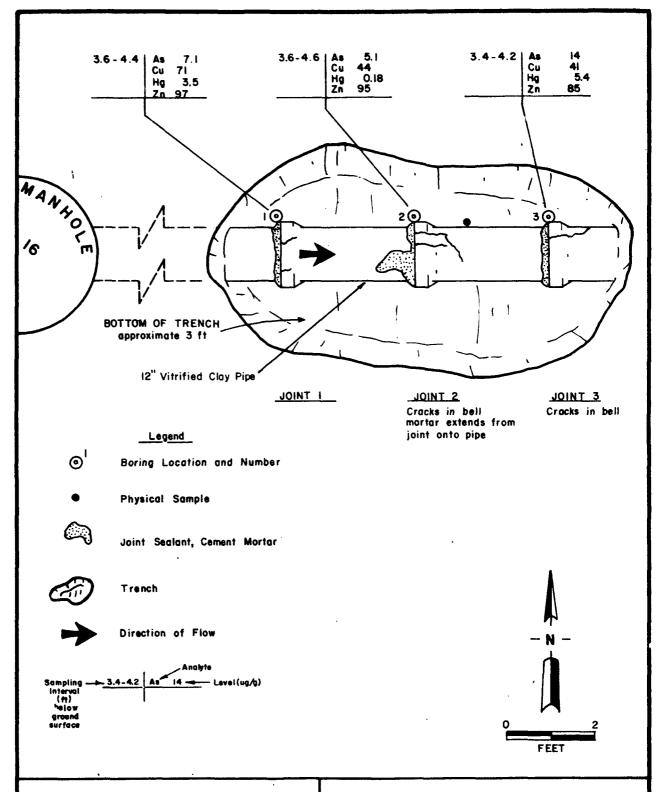












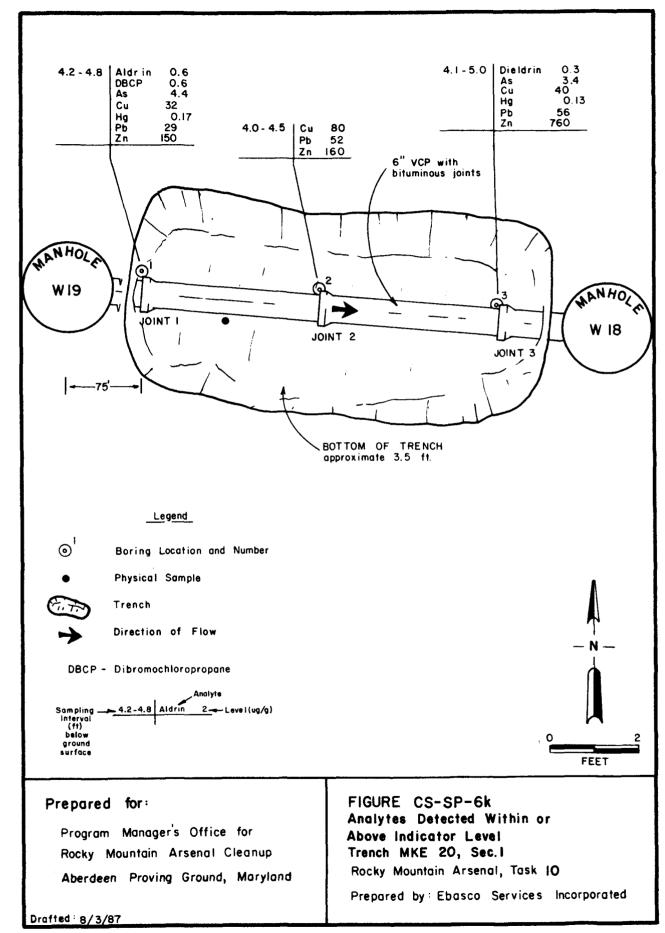
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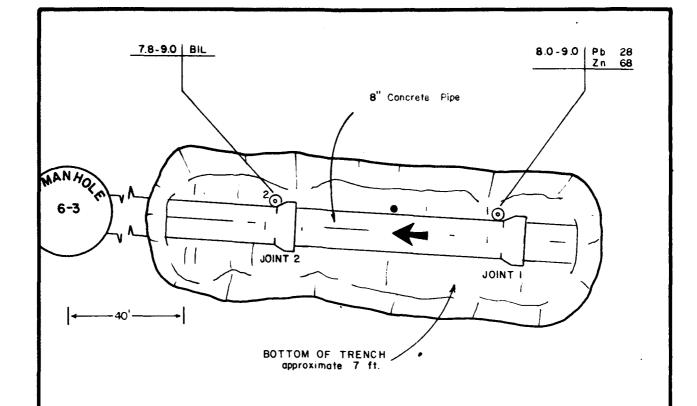
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FIGURE CS-SP-6; Analytes Detected Within or Above Indicator Levels Trench MKE 19, Sec. I Rocky Mountain Arsenal, Task 10





Legend

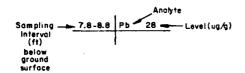
- Boring Location and Number
 - Physical Sample



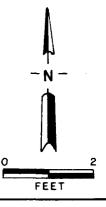
Trench



Direction of Flow



BIL - Below Indicator Level



Prepared for:

Program Manager's Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground, Maryland FIGURE CS-SP-61
Analytes Detected Within or
Above Indicator Level
Trench MKE 21, Sec. 2
Rocky Mountain Arsenal, Task 10

Prepared by: Ebasco Services Incorporated

Drafted: 8/4/87

Indicator levels and ranges were established to assess the significance of metal and organic analytical values. The indicator levels are the method detection limits for organic compounds. The indicator ranges for metals reflect the concentrations expected to occur naturally in RMA alluvial soils. Selection of these ranges is discussed in the Introduction to the Contamination Assessment Reports (ESE, 1986b).

In addition, numerous compounds were detected by GC/MS that were not included in the target compound list and that were not conclusively identified. Table CS-SP-11 lists the boring number, sample interval depth, relative retention time (shown as "unknown number" on the table), concentration, sample number, lot, and best-fit identification for these nontarget compounds. It should be noted that an individual compound may have more than one retention time, and also that a particular retention time may be assigned to more than one compound. Therefore, Table CS-SP-11 provides only a general indication of additional compounds that may be present.

Described below are the levels and distribution of target and nontarget analytes detected at each location investigated along the sewer line. These locations are identified on Plate CS-SP-1.

Manhole W21

In Manhole W21 (Figure CS-SP-6a), 18 volatile and semivolatile compounds and all of the metals except mercury were above indicator level in at least one sample. In general, concentrations of volatile compounds and several metals decrease with depth. The highest concentrations of semivolatile compounds were detected in the 17.0 to 18.0 ft interval.

Volatile compounds detected include: benzene (1 ug/g), bicycloheptadiene (0.7-2 ug/g), carbon tetrachloride (0.4-5 ug/g), chloroform (0.8-20 ug/g), chlorobenzene (2 and 5 ug/g), dibromochloropropane (6-800 ug/g), m-xylene (1 and 20 ug/g), methylene chloride (3 ug/g), methylisobutyl ketone (5 ug/g), o-and p-xylene (20 ug/g), tetrachloroethylene (0.7-9 ug/g), and toluene (0.5-20 ug/g). The following semivolatile compounds were detected: aldrin (10-100 ug/g), dibromochloropropane (0.4 and 0.5 ug/g), dieldrin (0.8 and 1 ug/g), isodrin (1 and 10 ug/g), parathion (30 ug/g), and supona (3 and 4 ug/g).

Table CS-SP-11. Tentative identification of Nontarget Compounds. Page 1 of 35.

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8.6-9.0 102 20 002 BWO 537 0.4 004 BWN 553 0.5 004 BWN 553 0.6 004 BWN 563 0.6 004 BWN 607 0.6 004 BWN 12.0-13.0 609 0.7 004 BWN 615 0.7 004 BWN 17.0-18.0 562 0 0 BWN 17.0-18.0 562 0 0 BWN 601 3 0.06 BWN 17.0-28.0 609 0 0 0 BWN 613 0 0 0 0 0 BWN	Borehole Number	Interval Depth (ft)	Unknown Number	Concentration (ppm)*	Sample Mumber	ž	Best-fit Identification	Comment
## 10.5								
136 20 004 BWO Fricyclo(2.2.1.02,6) heptan-3-ol 537 0.4 004 BWN halogenated propane 539 0.5 004 BWN butenedioic acid, bis(2-methyl-propyl) 581 0.6 004 BWN butenedioic acid, bis(2-methyl-propyl) 582 0.4 004 BWN branched hydrocarbon GT C-25 12.0-13.0 609 0.7 005 BWN hexadecanoic acid dibutyl ester 615 1	W2.1	0.0-0.8	102	30	002	BAO	3,3 dichloro-1-propene	
13.1 0.4 0.04 BVM			136	20	002	BVO	•	<
549 8 004 BVM halogenated propane 553 0.4 004 BVM butenedioic acid, bis(2-methyl-propyl) 579 0.4 004 BVM butenedioic acid, bis(2-methyl-propyl) 607 0.5 004 BVM branched hydrocarbon GT C-25 609 0.7 005 BVM branched hydrocarbon GT C-25 615 0.7 005 BVM branched hydrocarbon GT C-25 618 0.7 005 BVM branched hydrocarbon GT C-25 619 0.7 005 BVM branched hydrocarbon GT C-25 610 0.7 005 BVM branched hydrocarbon GT C-25 601 0.7 006 BVM branched hydrocarbon GT C-25 602 0.7 006 BVM bridged polycyclic hydrocarbon hydrocarbon hydrocarbon GT C-10 619 0.7 006 BVM bridged polycyclic hydrocarbon hydrocarbon hydrocarbon hydrocarbon GT C-10 610 0.7 006 BVM bridged polycyclic hydrocarbon hydrocarbon hydrocarbon GT C-10			537	₹.0	00	BVM	tricyclo(2.2.1.02,6) heptan-3-ol	
553 0.5 004 BVM butenedioic acid, bis(2-methyl-propyl) 579 0.4 004 BVM butenedioic acid, bis(2-methyl-propyl) 607 1 004 BVM branched hydrocarbon GT C-25 609 0.5 004 BVM branched hydrocarbon GT C-25 615 0.4 005 BVM branched hydrocarbon GT C-25 618 0.7 005 BVM branched hydrocarbon GT C-25 619 0.7 005 BVM branched hydrocarbon GT C-25 610 0.7 005 BVM branched hydrocarbon GT C-25 601 0.4 005 BVM branched hydrocarbon GT C-25 601 0.7 006 BVM branched hydrocarbon GT C-10 601 0.5 006 BVM bridged polycyclic hydrocarbon GT C-10 601 0.7 006 BVM bridged polycyclic hydrocarbon GT C-10 618 0.7 006 BVM bridged polycyclic hydrocarbon GT C-10 619 0.7			549	•	004	ВУМ	halogenated propane	
579 0.4 004 BVM butenedioic acid, bis(2-methyl-propyl) 607 1 004 BVM aster 609 0.5 004 BVM branched hydrocarbon GT C-25 619 0.7 005 BVM branched hydrocarbon GT C-25 619 0.7 005 BVM branched hydrocarbon GT C-25 615 1 005 BVM branched hydrocarbon GT C-25 615 1 005 BVM branched hydrocarbon GT C-25 615 1 005 BVM branched hydrocarbon GT C-25 618 1 005 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 619 0.7 006 BVM 2-butanedioic acid, dibutyl ester 61 0.5 006 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 61 0.7 006 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 618 0.7 006 BVM bridged polycyclic 618 0.7 006 BVM bridged			553	0.5	004	BVM		<
607 0.6 004 BVM branched hydrocarbon GT C-25 609 0.5 004 BVM branched hydrocarbon GT C-25 609 0.7 004 BVM heradecanoic acid 613 1 005 BVM heradecanoic acid 613 0.4 005 BVM heradecanoic acid 614 005 BVM heradecanoic acid 615 0.4 005 BVM heradecanoic acid 616 BVM c-butenedioic acid, dibutyl ester 601 0.5 006 BVM c-butenedioic acid, biell-methylpropyl 602 0.7 006 BVM c-butenedioic acid, biell-methylpropyl 603 0.7 006 BVM hydrocarbon 604 006 BVM hydrocarbon 619 0.7 006 BVM unknown cyclic hydrocarbon 610 0.7 006 BVM hydrocarbon 611 0.7 006 BVM hydrocarbon 612 0.7 006 BVM hydrocarbon 613 0.7 006 BVM unknown cyclic hydrocarbon 614 006 BVM hydrocarbon 615 0.7 006 BVM inthorn cyclic hydrocarbon 617 006 BVM inthorn cyclic hydrocarbon 618 BVM hydrocarbon 619 0.7 006 BVM cyclic hydrocarbon 610 BVM into origin by cyclic hydrocarbon 611 0.0 008 BVM into origin by cyclic hydrocarbon 612 0.0 008 BVM into origin by cyclic hydrocarbon 613 0.7 008 BVM into origin by cyclic hydrocarbon 613 0.7 008 BVM into origin by cyclic hydrocarbon 613 0.7 008 BVM into origin by cyclic hydrocarbon 613 0.7 008 BVM into origin by cyclic hydrocarbon 614 0.7 008 BVM into origin by cyclic hydrocarbon 615 0.7 008 BVM into origin by cyclic hydrocarbon 617 008 BVM into origin by cyclic hydrocarbon 618 0.7 008 BVM into origin by cyclic hydrocarbon 619 0.7 008 BVM into origin by cyclic hydrocarbon 610 000 000 BVM into origin by cyclic hydrocarbon 611 000 000 000 BVM into origin by cyclic hydrocarbon 612 000 000 000 000 000 000 000 000 000 0			579	4.0	900	BVM	butenedioic acid, bis(2-methyl-propyl)	
583 0.6 004 BVM 607 1 004 BVM branched hydrocarbon GT C-25 609 0.4 004 BVM branched hydrocarbon GT C-25 609 0.7 005 BVM heradecanoic acid dibutyl eater 615 1 005 BVM nonanediotc acid, dibutyl eater 618 0.7 005 BVM isomer of octadecene (E) 636 0.4 005 BVM 2-butenediotc acid, dibutyl eater 637 0.6 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 618 0.5 0.6 BVM 2-butenediotc acid, dibutyl eater 601 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 1,1,2,3,4,4-hexachloro-1,3-butadiene 601 BVM aceter bydrocarbon 602 BVM bridged polycyclic hydrocarbon 613 0.7 006 BVM bridged polycyclic hydrocarbon 614 0.7 006 BVM bridged polycyclic hydrocarbon 615 0						•	ester	_
607 1 004 BVM 619 0.5 0014 BVM branched hydrocarbon GT C-25 619 0.7 005 BVM hexadecanoic acid dibutyl ester 615 0.4 005 BVM hexadecanoic acid dibutyl ester 615 0.4 005 BVM nonanedioic acid, dibutyl ester 616 0.4 005 BVM nonanedioic acid, dibutyl ester 617 0.6 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 618 0.7 006 BVM hexachloro bridged polycyclic 619 0.7 006 BVM exachloro bridged polycyclic 610 0.7 006 BVM dichlorinated organo phosphoric acid 627 1 006 BVM dichlorinated organo phosphoric acid 628 0.4 006 BVM hexachloro bridged polycyclic 639 0.7 006 BVM hexachloro bridged polycyclic 639 0.7 006 BVM hexachloro bridged polycyclic 630 0.7 006 BVM hexachloro bridged polycyclic 630 0.7 006 BVM hexachloro bridged polycyclic 631 0.7 006 BVM hexachloro bridged polycyclic 632 0.7 006 BVM hexachloro bridged polycyclic 633 0.7 006 BVM hexachloro bridged polycyclic 634 0.7 006 BVM hexachloro bridged polycyclic 635 0.7 006 BVM hexachloro bridged polycyclic 637 1.1 0.006 BVM hexachloro or olycyclic 638 0.7 006 BVM hexachloro bridged polycyclic 639 0.7 006 BVM hexachloro or olycyclic 630 0.7 006 BVM hexachloro or olycyclic 631 0.7 006 BVM hexachloro or olycyclic 632 0.7 006 BVM hexachloro or olycyclic 633 0.7 006 BVM hexachloro or olycyclic 634 0.7 006 BVM hexachloro or olycyclic 635 0.7 006 BVM hexachloro or olycyclic 637 0.7 006 BVM hexachloro or olycyclic hydrocarbon 638 0.7 006 BVM hexachloro or olycyclic hydrocarbon or olycyclic hydro			583	9.0	00	BVM		<
609 0.5 004 BVM branched hydrocarbon GT C-25 619 0.7 003 BVO hexadecanoic acid, dibutyl ester 615 1. 005 BVM nonanedioic acid, dibutyl ester 616 0.4 005 BVM isomer of octadecene (E) 617 006 BVM 2-butenedioic acid, dibutyl ester 618 0.7 006 BVM 2-butenedioic acid, bis(1-methylpropyl) 619 0.7 006 BVM hexachloro bridged polycyclic 610 0.7 006 BVM dichlorinated organo phasphoric acid 611 1 006 BVM dichlorinated organo phasphoric acid 612 1 006 BVM dichlorinated organo phasphoric acid 613 0.7 006 BVM dichlorinated organo phasphoric acid 614 0.7 006 BVM hexachloro bridged polycyclic 615 0.7 006 BVM hexachloro bridged polycyclic 616 BVM dichlorinated organo phasphoric acid 617 0.7 006 BVM hexachloro bridged polycyclic 618 0.7 006 BVM highrocarbon 619 0.7 006 BVM hexachloro bridged polycyclic 610 BVM hexachloro bridged polycyclic 610 BVM hexachloro bridged polycyclic 611 0.7 006 BVM hexachloro bridged polycyclic 612 0.7 006 BVM hexachloro bridged polycyclic 613 0.7 006 BVM hexachloro bridged polycyclic 614 0.7 006 BVM hexachloro bridged polycyclic 615 0.7 006 BVM hexachloro bridged polycyclic 616 0.7 006 BVM hexachloro bridged polycyclic 617 0.7 006 BVM hexachloro bridged polycyclic 618 0.7 006 BVM bridged polycyclic 619 0.7 006 BVM bridged polycyclic 610 0.7 006 BVM hexachloro bridged polycyclic 610 0.7 006 BVM bridged polycyclic 610 0.7 006 BVM bridged polycyclic			607	1	7 00	BVM		<
609 0.4 004 BVM branched hydrocarbon GT C-25 615 0.7 005 BVM hexadecanoic acid 616 0.7 005 BVM isomer of octadecene (E) 617 005 BVM isomer of octadecene (E) 618 1 006 BVM 2-butenediolc acid, bis(1-methylpropyl) 619 0.7 006 BVM 2-butenediolc acid, bis(1-methylpropyl) 610 0.7 006 BVM dichlorinated organo phosphoric acid 611 0.7 006 BVM dichlorinated organo phosphoric acid 612 1 006 BVM dichlorinated organo phosphoric acid 613 0.7 006 BVM dichlorinated organo phosphoric acid 614 1 006 BVM dichlorinated organo phosphoric acid 615 0.7 006 BVM dichlorinated organo phosphoric acid 617 006 BVM dichlorinated organo phosphoric acid 618 1 006 BVM dichlorinated organo phosphoric acid 619 0.7 006 BVM dichlorinated organo phosphoric acid 610 BVM hexachloro bridged polycyclic 611 0.7 006 BVM isomerof aldrin 612 100 008 BVM isomerof aldrin 613 0.5 008 BVM isomerof aldrin			609	0.5	004	BVM		<
609 0.7 005 BVM heradecanoic acid 615 1 005 BVM nonanacioto acid dibutyl ester 616 0.4 005 BVM nonanacioto acid, dibutyl ester 617 0.6 BVM isomer of octadecene (E) 618 3 006 BVM 2-butenediol acid, bis(1-methylpropyl) 619 0.7 006 BVM hydrocarbon 619 0.7 006 BVM dichlorinated organo phosphoric acid 627 0.7 006 BVM dichlorinated organo phosphoric acid 628 0.7 006 BVM dichlorinated organo phosphoric acid 629 0.7 006 BVM hexachloro bridged polycyclic 635 0.7 008 BVM cyclic hydrocarbon 636 BVM cyclic hydrocarbon 637 008 BVM cyclic hydrocarbon 638 009 BVM cyclic hydrocarbon 639 005 BVM cyclic hydrocarbon 630 005 BVM cyclic hydrocarbon 641 006 BVM cyclic hydrocarbon 642 007 008 BVM cyclic hydrocarbon 643 005 BVM cyclic hydrocarbon 644 006 BVM cyclic hydrocarbon 655 008 BVM cyclic hydrocarbon 657 008 BVM cyclic hydrocarbon 658 009 BVM cyclic hydrocarbon 659 005 BVM cyclic hydrocarbon 650 005 BVM cyclic hydrocarbon 651 005 BVM cyclic hydrocarbon 652 005 BVM cyclic hydrocarbon 653 005 BVM cyclic hydrocarbon 654 005 BVM cyclic hydrocarbon 655 005 BVM cyclic hydrocarbon 657 005 BVM cyclic hydrocarbon 658 005 BVM cyclic hydrocarbon 659 005 BVM cyclic hydrocarbon 650 005 BVM cyclic hydrocarbon 650 005 BVM cyclic hydrocarbon 651 005 BVM cyclic hydrocarbon 650 005 BVM cyclic hydrocarbon 650 005 BVM cyclic hydrocarbon 650 005 BVM cyclic hydrocarbon			635	0.4	900	BVM	branched hydrocarbon GT C-25	
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635 1. 005 BVM isomer of octadecene (E) 636 0.4 005 BVM isomer of octadecene (E) 637 0.5 006 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 637 0.5 006 BVM 2-butenedioic acid, bis[1-methylpropy]) 638 0.7 006 BVM hexachloro bridged polycyclic 608 0.7 006 BVM unknown cyclic hydrocarbon 613 0.7 006 BVM dichlorinated organo phosphoric acid 627 1 006 BVM dichlorinated organo phosphoric acid 628 0.7 006 BVM hexachloro bridged polycyclic 635 0.7 006 BVM hexachloro bridged polycyclic 635 0.7 006 BVM hexachloro bridged polycyclic 635 BVO BVM hexachloro bridged polycyclic 635 BVO BVM hexachloro-1,3-butadiene 642 1 006 BVM risomer of aldrin 653 0.7 008 BVM risomer of aldrin 654 1.0 008 BVM cyclic hydrocarbon GT C-10			809	7.0	500	MA	Pine Dine Dine	•
10			35		200	470	retree (catalogy of the catalogy of the catalo	. =
562 3 0.04 0.05 0.04 0.05 0.04 0.05 0.06 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.08 0.07 0.08 0.07 0.08 0.07 0.08 0.07 0.08 0.08 0.07 0.08			cTo	, (600		ומושותמדמות שכזמי מזמרואז בפרבו	•
562 3 006 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 579 0.5 006 BVM 2-butenediolc acid, bis(1-methylpropyl) 601 3 006 BVM hexachloro bridged polycyclic 607 0.7 006 BVM hydrocarbon 613 0.7 006 BVM unknown cyclic hydrocarbon 618 1 006 BVM dichlorinated organo phosphoric acid 627 1 006 BVM dichlorinated organo phosphoric acid 627 1 006 BVM hydrocarbon 635 0.7 006 BVM 612 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 612 100 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 612 100 BVM 1,1,2,3,4,4-hexachloro-1,3-b			636	4.0	900	BVR	isomer of octadecene (E)	
562 3 006 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 579 0.5 006 BVM 2-butenedioic acid, bis(1-methylpropyl) 601 3 006 BVM hexachloro bridged polycyclic 608 0.7 006 BVM unknown cyclic hydrocarbon 613 0.7 006 BVM dichlorinated organo phosphoric acid 618 1 006 BVM dichlorinated organo phosphoric acid 627 1 006 BVM hexachloro bridged polycyclic 635 0.7 006 BVM hexachloro bridged polycyclic 615 BVM hexachloro bridged polycyclic hydrocarbon 615 BVM hexachloro bridged polycyclic 616 BVM hydrocarbon 617 006 BVM 618 BVM 1,1,1,2,3,4,4-hexachloro-1,3-butadiene 619 BVM 1,1,1,2,3,4,4-hexachloro-1,3-butadiene 611 009 BVM 1,1,1,2,3,4,4-hexachloro-1,3-butadiene 612		17.0-18.0			900	BVO		×
601 3 006 BVW 2-butenedial acid, biell-methylpropyl) ester 601 3 006 BVW hexachloro bridged polycyclic 607 0.7 006 BVW unknown cyclic hydrocarbon 618 1 006 BVW dichlorinated organo phosphoric acid 627 1 006 BVW dichlorinated organo phosphoric acid 627 1 006 BVW bridged polycyclic hydrocarbon 635 0.7 006 BVW hexachloro bridged polycyclic 635 BVO 007 BVW 612 10 008 BVW isomer of aldrin 613 0.5 008 BVW cyclic hydrocarbon GT C-10			562	m	900	BVM	1.1.2.3.4.4-hexachloro-1.3-butadiene	
601 3 006 BVM hexachloro bridged polycyclic hydrocarbon 0.7 006 BVM hexachloro bridged polycyclic hydrocarbon 0.4 006 BVM unknown cyclic hydrocarbon 0.7 006 BVM dichlorinated organo phosphoric acid BVM bridged polycyclic hydrocarbon 0.7 006 BVM bridged polycyclic hydrocarbon hydrocarbon 0.7 006 BVM hexachloro bridged polycyclic hydrocarbon 0.7 005 BVM hexachloro-1,3-butadiene 0.5 008 BVM isomer of aldrin 0.5 0.5 0.8 BVM cyclic hydrocarbon GT C-10			579	8,0	900	BVM	2-butenedioic acid, bis(1-methylpropy))	
601 3 006 BVM headchloro bridged polycyclic hydrocarbon 0.7 006 BVM hydrocarbon 0.4 006 BVM unknown cyclic hydrocarbon 613 0.7 006 BVM unknown cyclic hydrocarbon 0.7 006 BVM dichlorinated organo phosphoric acid 627 1 006 BVM bridged polycyclic hydrocarbon 0.7 006 BVM hexachloro bridged polycyclic hydrocarbon 0.7 006 BVM hydrocarbon 0.7 006 BVM hydrocarbon 0.7 008 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 612 100 008 BVM cyclic hydrocarbon GT C-10			•		}	:	ACADE LANGUE LAN	•
607 0.7 006 BVM hydrocarbon 608 0.4 006 BVM unknown cyclic hydrocarbon 613 0.7 006 BVM unknown cyclic hydrocarbon 618 1 006 BVM dichlorinated organo phosphoric acid 627 1 006 BVM bridged polycyclic hydrocarbon 627 0.7 006 BVM hexachloro bridged polycyclic hydrocarbon 635 007 BVM hydrocarbon 607 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 612 100 008 BVM cyclic hydrocarbon GT C-10			ţ	,	,	2		•
607 0.7 006 BVM unknown cyclic hydrocarbon 613 0.7 006 BVM unknown cyclic hydrocarbon 613 0.7 006 BVM dichlorinated organo phosphoric acid 627 1 006 BVM bridged polycyclic hydrocarbon 635 0.7 006 BVM heachloro bridged polycyclic hydrocarbon 635 007 BVM 612 100 008 BVM isomer of aldrin 612 100 008 BVM cyclic hydrocarbon GT C-10			706	7	8	E > 20	nexaching pringed polycyll	
607 0.7 006 BVM 618 0.4 006 BVM unknown cyclic hydrocarbon 618 1 0.7 006 BVM dichlorinated organo phosphoric acid 627 1 006 BVM bridged polycyclic hydrocarbon 635 0.7 006 BVM hexachloro bridged polycyclic hydrocarbon 635 BVM hexachloro bridged polycyclic hydrocarbon 005 BVM hydrocarbon 007 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 612 10 008 BVM cyclic hydrocarbon GT C-10							hydrocarbon	,
608 0.4 006 BVM unknown cyclic hydrocarbon 613 0.7 006 BVM unknown cyclic hydrocarbon 627 1 006 BVM dichlorinated organo phosphoric acid 627 1 006 BVM bridged polycyclic hydrocarbon 627 0.7 006 BVM hexachloro bridged polycyclic hydrocarbon 005 BVO 007 BVM 007 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 612 100 008 BVM cyclic hydrocarbon GT C-10			607	0.1	900	BVR		<
613 0.7 006 BVM unknown cyclic hydrocarbon 618 1 006 BVM dichlorinated organo phosphoric acid 627 1 006 BVM dichlorinated organo phosphoric acid 627 0.7 006 BVM bridged polycyclic hydrocarbon 615 BVO 007 BVM hexachloro bridged polycyclic 616 BVO 007 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 617 100 008 BVM cyclic hydrocarbon GT C-10			809	₹. 0	900	BVM		<
618 1 006 BVM dichlorinated organo phosphoric acid 627 1 006 BVM bridged polycyclic hydrocarbon 615 0.7 006 BVM heachloro bridged polycyclic hydrocarbon 005 BVO 007 BVM 007 BVM 007 BVM 008 BVO 008 BVM isomer of aldrin 612 100 008 BVM cyclic hydrocarbon GT C-10			613	0.1	900	BVM	unknown cyclic hydrocarbon	
627 1 006 BVM bridged polycyclic hydrocarbon 635 0.7 006 BVM hexachloro bridged polycyclic hydrocarbon 005 BVO 007 BVM 006 BVO 612 10 008 BVM isomer of aldrin 613 0.5 008 BVM cyclic hydrocarbon 627 10			618	-	900	BVM	dichlorinated organo phosphoric acid	
635 0.7 006 BVM hexachloro bridged polycyclic hydrocarbon 005 BVO 007 BVM 007 BVM 007 BVM 008 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 612 100 008 BVM cyclic hydrocarbon GT C-10 613 0.5 008 BVM cyclic hydrocarbon GT C-10			627	~	900	BVR	bridged polycyclic hydrocarbon	
hydrocarbon 005 BVO 007 BVM 006 BVO 612 100 008 BVM isomer of aldrin 613 0.5 008 BVM cyclic hydrocarbon GT C-10			635	0.7	900	BVN	hexachloro bridged polycyclic	
612 100 008 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 612 100 008 BVM 1,0mer of aldrin 613 0.5 008 BVM cyclic hydrocarbon GT C-10			}	;		I	hydrocarbon	
007 BVM 007 BVM 006 BVO 561 1 008 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 612 100 008 BVM isomer of aldrin 613 0.5 008 BVM cyclic hydrocarbon GT C-10					3	CV _B		_
561 1 008 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 612 100 008 BVM isomer of aldrin 613 0.5 008 BVM cyclic hydrocarbon GT C-10		74.0-43.0			000	BVN		: *
561 1 008 BVM 1,1,2,3,4,4-hexachloro-1,3-butadiene 612 100 008 BVM isomer of aldrin 613 0.5 008 BVM cyclic hydrocarbon GT C-10								
1 009 BVM 100 008 BVM 0.5 008 BVM		27.0-28.0			900	BVO		×
100 008 BVM			561	-	900	BVM	1,1,2,3,4,4-hexachloro-1,3-butadiene	
NV8 800 5.0			612	100	800	BVM	isomer of aldrin	
			13	5.0	800	BVM	cyclic hydrocarbon GT C-10	

A - No positive identification
D - Derived from natural products
E - Suspected laboratory contaminant
GT - Greater than
R - None detected
- - Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 2 of 35.

Borehole	Interval Depth	Unknown	Concentration	Sample		Best-fit	Comments
Number	(4)	Mumber	• (wdd)	Number	Į.	Identitication	
ŝ	27.0-28.0	613		800	BVM	hexachloro polycyclic bridged	
7 7 8		1				hydrocarbon	
		627	9.0	800	BVM	unknown aromatic	
		636	9.0	800	BVM	polycyclic bridged hydrocarbon	
•	•	202	006	002	BVM	dichloropropene	
1 25	F. 7-1. S	701	3	005	BVW	dibromopropene	
		977	; •	003	BVW	dibromopropane	
		542	300	003	BVP	1,3,5-trimethyl benzene (or isomer)	
		\$62	96	003	BVP	1,1,2,3,4,4-hexachloro-1,3-butadiene	
		60.7	700	003	BVP	unknown with 3 chlorines	
		609	300	003	BVP	unknown with 3 chlorines	
		•	•	100	BVE	chloropropene	
	11.6-12.8	6	,	003	BVW	dichloropropene	
		707	? .	003	BVW	dibromopropene	
		CTT	•	† 00	BVP	•	×
	•			700	358		~
	16.2-17.2	•	,	5	H A	hexadecanoic acid	۵
		\$ 1 C	* 6	500	BVP	nonanedioic acid, dibutyl ester	۵
		619	0.2	900	BVP		<
				Č	700		×
	21.1-22.1			600		bine of the state	۵
		609	0.2	900	4	menadection and dibutal ester	A
		615	0.5	900	8 A	DONALD STATE STATE STATES	4
		619	0.7	900	BVP		;
	26.2-27.2			900	BVW		×
•				002	BVW		×
W27	6.7-6.0	773	6-0	005	BVZ	1-chloro-4(1-propynyl)-benzene	
				005	872	branched hydrocarbon, C-10	
		100	7	005	BVZ	9	
		400	· a	002	BVZ	decahydro-2-methyl naphthalene isomer	
		200	• • • • • • • • • • • • • • • • • • •	002	BVZ	pentachloro-1,3-butadiene	
		P CC 1	* a	003	BVZ	pentachloro-1,3-butadiene isomer	
		766	• -	002	BVZ	trichlorobenzene isomer	
		BCC	•	}			

A - No positive identification
D - Derived from natural products
K - None detected
- - Values reported are blank corrected

Site CS-SP 4924A/1041A Rev. 7/01/88

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Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 3 of 35.

Onknown Concentration Sample Number (ppm)* Number 559 0.8 002
50 002
0.5 002
1 002
3 002
1 002
0.9 002
3 002
0.6 002
0.7 002
1 002
2 002
4 002
6 602
200
4 002
0.9 002
0.4 002
0.8 002
0.6 002

D - Derived from natural products

- Values reported are blank corrected
Site CS-SP
4924A/1041A
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Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 4 of 35.

.

	Interval					4
Borehole	Depth	Unknown	Concentration (new)*	Number	Ę	Identification
Mumber	(12)	1 acres	/ wed			
	6.5-7.5	601	10	200	BV£	polychlorinated cyclic hydrocarbon,
						01-0
		6.02	0.7	200	BV2	tetrachlorinated metnylbensene
		703	•	200	BVS	polychlorinated acyclic hydrocarbon
				005	872	polychlorinated acyclic hydrocarbon
		609	• •	005	278	polychlorinated cyclic hydrocabon
		900	•	}	·	GT C-12
		•	•	000	BVZ	Inated
		909	, ,	200	202	polychlorinated acyclic hydrocarbon
		909		3 6	***	polychlorinated acyclic hydrocarbon
		610	~	700	9 1	
		611	20	200	842	- and recorded to the desire the second of t
		614	,	005	BV2	polychlorinated acyclic ajdrodinated
						GT C-11
		614	0.8	002	B V2	polychlorinated adyciic nydrocarpon,
		513	30	007	BVI	1,2,3,4,10 ,10-nerachioromitational
)			1,4,5,8 dimethanonaphthalene 1somer
		317	-	002	BVZ	alkylated benzene GT C-13
		670	, c	007	2/8	
		919		9	BVZ	polychlorinated alicyclic hydrocarbon
		619	7 (200	possibly polychlorinated alicyclic
		619	o.,	700	;	hydrogarbon
				;		and to hadronarhos, C.15, Dosethly
		623	0.7	002	2 0	Cyclic indicates a to the produce the
						polychlorimeted militariate my community
		623	8	002	BVZ	hydrocarbon with 6 chiorines of C-12
		75	•	005	BV 2	isomer of 2,7:36 dimethanonaphth (2,3-6)
		+79	•	1	i	oxirme, 3,4,5,6,9,9-hexachloro-
						IA, 2, 2A
		;	9	000	BVZ	isomer of 1,1-(2,2,7-trichloroethyli-
		929	2	;)	dene) bis(4-chloro-)benzene
						possibly o,p'-DDT
					****	notuchtor insted acyclic hydrocarbon
		627	-	700	7 0	respectoring and accorded hydrocarbon
		628	2	005	8 v 2	
						01 C-10
		71.7		007	BVZ	2, 5, 7-metheno-3H-cyclopentalA/pentalen
			•			3-one, 3b,4,5,6,6A hexachloro
		707	,	007	· BVZ	polychlorinated acyclic hydrocarbon
	-	• • • •	• •	002	BVZ	tetrachlorinated acyclic hydrocarbon
		979	•	3	İ	GF C-12
		•	•	000	BVZ	hexachlorinated acyclic hydrocarbon
		639	-	•	i : 1	
		;;	4	002	BVZ	<
		710	•			

A - No positive identification
 GT - Greater than
 - Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 5 of 35.

100

Borehole	Interval Depth	Unknown	Concentration	Sample		Best-fit	
Mumber	(ft)	Mumber	• (mdd)	Number	Fot	Identification	Comments
W27	11.5-12.5			800	BVW		×
		536	-	003	872	tricyclo(2-2-1-02-6) heptan-3-ol	
		549	. 02	003	BV2	dibromochloropropane isomer	
		552	7	003	2 08	•	<
		261	7	003	2/9	hexachloro-1,3-butadiene isomer	
		579	0.8	003	BVZ	2-butenedioic acid, bis(2-methylpropyl)	
	±1					ester	۵
		583	4.0	003	BVZ	alkylated phenol GT C-15	
		591	₹.0	003	BVZ	octachloro cyclopentene	
		601	8.0	003	BVZ		<
		607	0.7	003	872	dichlorinated pyridine	
		626	0.7	003	872	1,1,-(2,2,2-trichloroethylidene) bis(4-	
						chloro) benzene	
		969	0.5	003	BVZ	hexachlorinated naphthalene	
		637	0.7	003	BV2	branched hydrocarbon, C-25	
	16.2-17.2			000	RMC		×
		553	7	900	BVZ	Dentamethyl disilane	
		561	9.0	* 00	BVZ	1,1,2,3,4,4-hexachloro-1,3-butadiene	
		579	9.0	004	BVZ	2-butenedioic acid, bis(2-methylpropyl)	
						ester	
		599	0.4	₩00	BVZ	3,3,4,4-tetrabromo hexane	
		109	9.0	₹00	2 / 8	cyclic hydrocarbon, C-10 with 6	
						chlor ines	
		607	-	900	2/8	hydrocarbon with 3 chlorines	
		609	-	004	BVZ	hydrocarbon with 3 chlorines	
	21.2-22.2			003	DMC		=
		553	0.5	900	BVZ	2-(dichloromethyl) 1,3 dioxolane	
		579	9.0	500	BVZ	2-butenedioic acid, bis(2-methylpropy1)	•
						ester	-
	26.2-27.2			♦ 00	BWC		×
		548	٠	900	2/18	dibromochloropropane isomer	
		552	0.7	900	BVZ	2(dichloromethyl) 1,3-dioxolane	
		579	0.5	900	BVZ	2-butenedioic acid, bis (2-methyl	
						propyl) ester	۵
		609	9.0	900	BVZ	hexadecanoic acid	ے

A - No positive identification
D - Derived from natural products
GT - Greater than
K - None detected
- - Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 6 of 35.

17.00

Comments	* *	× c		××		× #	* *	K B	× 0	< 0 <	i	* *	×
Best-fit Identification		2-butenedioic acid, bis(2-methylpropyl)	ester nomanedicic acid, dibutyl ester		bromodichloromethane alkylated phenol, C-15	2-butenedioic acid, (bis(2-methyl-propyl) ester		nonanedioic acid, dibutyl ester	butenedioic acid, bis(2-methyl- probyl) ester	hexadecanoic acid	octadecanoic acid		
Sot	BWZ BVZ	BWC	BVZ .	BWC	BWC BV3	BWD	BUV	BUV	BUV	BUX	¥ n¥	BUV	1 2 8
Sample Number	005 007	900	900	000	008	002	004	005 015	000	002	005	007	003
Concentration (ppm)*		0.3	0.5		e 0 4.	••		0.3	0.3	2.4	0.0 4.0		
Unknown Number		579	615		080 583	579		615	579	809	618 619		
Interval Depth (ft)	3.2-4.2	6.2-9.2		12.2-13.2	17.2-18.2	22.2-23.2	12.5-13.5	17.5-18.5	23.5-24.5			29.0-30.0	4.0-5.0
Borehole Number	+-3						ī						CS0101

A - No positive identification
D - Derived from natural products
E - Suspected laboratory contaminant
K - None detected
- - Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 7 of 35.

! :

Borehole	Depth	Unknown	Concentration	Sample		Best-fit	
Number	(tr)	Number	• (mdd)	Number	Σţ	Identification	Comments
C80102	4.0-5.0			004	128		*
		577	10	600	920	2,4,6-trichlorobenzenamine or isomer	
		578	10	600	92D	unknown with 3 chlorines	
		614	œ	600	028	cyanazine	
		619	6.0	600	BZD		<
		620	7	600	8ZD	octadecanoic acid	۵
		624	7	600	BZD .		~
		625		900		alcohol. C-17	
		637	6.0	600	028	bis(2-ethylhexyl) phthalate	1 3
CS0103	4.0-5.0			902	821		¥
		\$7.6	0.5	000	HZ6	trichlorobenzenamine	
		592	•	007	BZH	6-chloro-N-ethyl-1,3,5-triazine-2,4-	
		1				diamine	
		611	9.0	007	H28	2-[4-chloro-6-(ethylamino)-1,3,5-	
						triazin-2-yl) amino]-2-methyl	
						propanenitrile	
		612	v	005	BZH	2-[4-chloro-6-(ethylamino)-1,3,5-	
						triazin-2-y1) amino]-2-methyl	
						propanenitrile	
		624	9.0	005	HZ4	4-(methylsulfonyl)-2,6-dinitro-N,N-	
						dipropyl benzenamine	
CS0104	4.0-5.0			900	128		×
		576	m	003	B2H	trichlorobenzenamine	
		577	m	003	H28	hydrocarbon with 3 chlorines	
		579	0.7	003	HZ8	2-butenedioic acid diester	۵
		109	4.0	003	BZH	unknown phthalate	ر. در
		612	-	003	B2H	2-[4-chloro-6-(ethylamino)-1,3,5-	
						triazin-2-yl) amino]-2-methyl probanenitrile	
		624	0.7	003	BZH	possible metabolite of atrazine	
		630	0.4	003	H28	hexanedioic acid diester	. '0
CS0105	4.0-5.0			00	128		×
! ! ! !		878	7	004	BZH	trichlorobenzenamine	
		578		900	H28	unknown hydrocarbon with 3 chlorines	
		593	0.1	\$00	H28	6-chloro-N-ethyl-1,3,5-triazine-2,4-	
						46,41,7	

A - No positive identification
C - Plasticiser
D - Derived from natural products
E - Suspected laboratory contaminant
P - Low concentration
K - None detected
- Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 8 of 35.

Number	nebc:						
	(4)	Number	# (wdd)	Number	Lot	Identification	Comments
CS0105	4.0-5.0	613	•	400	H 24	2-{ (4-ch]oro-6(athy]amino)-1:3.5-	
		}	•	;	į	triazine-2-yl) amino-2-methyl]	
						propanentrile	
		620	₹.0	004	H28	linear alkane, C-23	
		625	9	900	H28	possible metabolite of atrazine	
		633	6.0	004	H24	4-{methylaufonyl}-2,6-dinitro-N,	
		\$1.7		700	3	alter C-28	
			•	5 8		Mindropole C-23	
		D 7	•	•	E 19 20	nydrocarbon with 5 chiorines	
CS0106	4.0-5.0			800	128		×
		576	,	900	HZG	trichlorobenzenamine isomer	
		578	ø	900	BZH	dichlorosubstitued aromatic	
		969	7	900	BZH	6-chloro-N-ethyl-l, 3,5-triazine-2,4-	
						diamine	
		616	20	200	BIH	2-[(4-chloro-6-(ethylamino)-1,3,5-	
						triazine-2-yl) amino]-2-methyl	
						propanentrile	
		635	•	900	H28	alkene or alcohol GT C-18	
CS0107	4.0-5.0			600	128		×
		576	,	900	BZH	trichlorobenzenaminemer	
		577	φ	900	HZG	dichloro substituted aromatic	
		593	7	900	H28	6-chloro-N-ethyl-1,3,5-triazine-,4-	
						diamine	
		613	9	900	BZH	2-[(4-chloro-6-(ethyl-amino)-1,3,5-	
						triazine-2-yl) amino]-2-methyl	
						propanentrile	
		629	7	900	H28	unknown with one chlorine	
		634	10	900	H28	4-(methylsulfonyl)-2,6-dinitro-M,N-	
						dipropyl benzenamine	
		638	7	500	BZH	unknown phthalate	د ک
		640	9.0	900	BZH		<
		642	†. 0	900	H28		<
		944	3	900	B2H		<
SOLOS	4.0-5.0			002	82 K		×
		576	y . C	800	92H	trichlorobenzenamine isomer	
		2 6 6	7	800	HZH		<
		6	* :-	800	# Z &	6-ch]oro-N-ethv]-1.3.5-triezine-2.4-	•
		760	-	9		diagine	

A - No positive identification
C - Plasticizer
F - Low concentration
GT - Greater than
R - None detected
• - Values reported are blank corrected

Table US-SP-11. Tentative identification of Nontarget Compounds. Page 9 of 35.

4.0-5.0 609 613 627 613 635 8.0-9.0 593 613 614 644 4.0-5.0 609 619 619 619 619 619 619 619 61	Borehole	Depth	Unknown	Concentration	Sample		Best-fit	
4.0-5.0 669 613 9 0.7 0.08 BZH 2-((4ch)loroe-(ethylanino)-1,3,5- tridaine-2-yl aminoj-2-methyl propanentitile 627 2 0.08 BZH 4-(methylaulfonyl)-2,6-di-M,M-dipropyl 638 0.8 0.08 BZH 4-(methylaulfonyl)-2,6-di-M,M-dipropyl 639 0.6 0.09 BZH 4-(methylaulfonyl)-2,6-di-M,M-dipropyl 639 0.7 0.09 BZH 4-(methylaulfonyl)-1,3,5-tridaine-2,4- diamine 613 7 0.09 BZH 4-(methylaulfonyl)-1,3,5-tridaine-2,4- 639 0.7 0.09 BZH 4-(methylaulfonyl)-1,3,5-tridaine-2,4- 630 0.7 0.09 BZH 4-(methylaulfonyl)-1,3,5-tridaine-2,4- 630 0.7 0.09 BZH 4-(methylaulfonyl)-1,3,5-tridaine-2,4- 630 0.7 0.09 BZH 4-(methylaulfonyl)-1,3,6-di-M,M-dipropyl 630 0.7 0.09 BZH 4-(methylaulfonyl)-2,6-di-M,M-dipropyl 631 0.7 0.09 BZH 5-(methylaulfonyl)-2,6-di-M,M-dipropyl 632 0.7 0.09 BZH 5-(methylaulfonyl)-2,6-di-M,M-dipropyl 633 0.7 0.09 BZH 6-(methylaulfonyl)-2,6-di-M,M-dipropyl 640 0.7 0.09 BZH 6-(methylaulfonyl)-2,6-di-M,M-dipropyl 651 0.4 0.00 BZH 6-(methylaulfonyl)-2,6-di-M,M-dipropyl 652 0.4 0.00 BZH 6-(methylaulfonyl)-2,6-di-M,M-dipropyl 653 0.4 0.00 BZH 6-(methylaulfonyl)-2,6-di-M,M-dipropyl 654 0.4 0.00 BZH 6-(methylaulfonyl)-2,6-di-M,M-dipropyl 655 0.4 0.00 0.00 651 0.4 0.00 0.00 652 0.4 0.00 0.00 653 0.4 0.00 0.00 654 0.4 0.00 0.00 655 0.4 0.00 0.00 656 0.4 0.00 0.00 657 0.4 0.00 0.00 658 0.4 0.00 0.00 659 0.4 0.00 0.00 650 0.4 0.00 0.00 650 0.4 0.00 0.00 650 0.4 0.00 0	Number	(E)	Number	• (wdď)	Number	Lot	Identification	Comments
6.13 9 0.08 BZH 2-((4-ch)roca-(rethylasino)-1,3,5- 6.14 6.15	CS0108	4.0-5.0	609	0.7	800	BZH	unknown phthalate	•
6.27 2 008 B2H 4-(methylaulforyl)-2-inethyl propanentitle 6.39 0.08 B2H 4-(methylaulforyl)-2,6-di-M,W-dipropyl 6.0-9.0 593 0.6 0.09 B2H 4-(methylaulforyl)-2,6-di-M,W-dipropyl 6.0-9.0 593 0.6 0.09 B2H heradecanoic acid plus an unknown phalatet 6.09 0.7 0.09 B2H heradecanoic acid plus an unknown phalatet 6.33 0.7 0.09 B2H heradecanoic acid plus an unknown phalatet 6.33 0.7 0.09 B2H heradecanoic acid plus an unknown phalatet 6.34 0.7 0.09 B2H heradecanoic acid plus an unknown phalatet 6.35 0.7 0.09 B2H heradecanoic acid plus an unknown phalatet 6.39 0.4 0.09 B2H dimethylaulfonyl)-2,6-di-M,W-dipropyl 6.39 0.4 0.02 B2L bis bitly ester phthalate 6.30 0.4 0.02 B2L bis bitly ester phthalate 6.30 0.4 0.02 B2L heradecanoic acid dioctyl ester 6.39 0.4 0.03 B2L heradecanoic acid dioctyl ester 6.39 0.4 0.03 B2L heradecanoic acid dioctyl ester 6.39 0.4 0.03 B2L heradecanoic acid dioctyl ester 6.39 0.4 0.03 B2L heradecanoic acid dioctyl ester 6.39 0.4 0.03 B2L heradecanoic acid dioctyl ester 6.39 0.4 0.03 B2L heradecanoic acid dioctyl ester 6.39 0.4 0.03 B2L heradecanoic acid dioctyl ester 6.39 0.4 0.03 B2L heradecanoic acid dioctyl ester 6.39 0.4 0.03 B2L cetradecanoic acid dioctyl ester 6.39 0.4 0.03 B2L tetradecanoic acid dioctyl ester 6.30 0.4 0.03 B2L tetradecanoic acid dioctyl ester 6.30 0.4 0.03 B2L tetradecanoic acid dioctyl ester 6.30 0.4 0.03 B2L tetradecanoic acid dioctyl ester 6.30 0.4 0.03 B2L tetradecanoic acid dioctyl ester 6.30 0.4 0.03 B2L tetradecanoic acid dioctyl ester 6.30 0.4 0.03 B2L tetradecanoic acid dioctyl ester 6.30 0.4 0.03 B2L tetradecanoic acid dioctyl ester 6.30 0.4 0.03 B2L tetradecanoic acid dioctyl ester 6.30 0.4 0.03 B2L tetradecanoic acid dioctyl ester 6.30 0.4 0.03 B2L tetradecanoic acid dioctyl ester 6.30 0.4 0.03 B2L tetradecanoic acid dioctyl ester 6.30 0.4 0.4 0.03 B2L tetradecanoic acid dioctyl ester 6.30 0.4 0.4 0.4 0.4 0.4 0.4 0.4			613	•	800	BZH	2-[(4-chloro-6-(ethylamino)-1.3.5-	
6.0-9.0							triazine-2-yl) amino]-2-methyl	
8.0-9.0 8.0-0.0 8.0			7.03	·		;	propanentrile	
6.0-9.0 6.5				4 6	800	HZG		<
8.0-9.0 8.0-9.0 593 0.6 0.09 BZH Gamine 604 0.7 009 BZH Unknown phrhalate 609 1. 009 BZH Unknown phrhalate 609 1. 009 BZH Unknown phrhalate 609 1. 009 BZH Unknown phrhalate 609 BZH Unknown phrhalate 613 7 009 BZH Unknown phrhalate 626 0.7 009 BZH Heradecanoic acid plus an unknown Proparenitrile Froparenitrile Froparenitrile 633 0.7 009 BZH H-methylsuifonyl]-2,6-di-N,N-dipropyl Denzeraamine 635 0.7 009 BZH H-methylsuifonyl]-2,6-di-N,N-dipropyl Denzeraamine Denzeraamine Denzeraamine Denzeraamine H-methylsuifonyl]-2,6-di-N,N-dipropyl Denzeraamine Denzeraamin			r r	•	800	H28	4-(methylsulfonyl)-2,6-di-N,N-dipropyl	
6.0-9.0 6.04 6.07 6.09 6.04 6.07 6.09 6.0			635	9.0	800	2	Denzenamine	
6.0-9.0 593 0.6 003 BZNI G-chloro-N-ethyl-l,3,5-rriazine-2,4-dlamine 604 0.7 009 BZH unknown phthalate 609 1 009 BZH unknown phthalate 613 7 009 BZH unknown phthalate 626 0.5 009 BZH f-(methylamino)-1,3,5-rriazine-2-yl) amino)-2-methyl 635 0.7 009 BZH f-(methylamino)-1,3,5-rriazine-2-yl) amino)-2-methyl 14.0-15.0 639 0.7 009 BZH f-(methylamino)-1,3,5-rriazine-2-yl) amino)-2,6-di-N,N-dipropyl 14.0-5.0 609 0.7 009 BZH f-(methylamino)-1,3,5-rriazine-2-yl) amino)-2,6-di-N,N-dipropyl 14.0-5.0 609 0.7 009 BZH hexadecanoic acid 620 0.4 002 BZL hexadecanoic acid dioctyl ester 6.05 0.4 002 BZL hexadecanoic acid dioctyl ester 6.05 0.4 0.03 BZL hexadecanoic acid dibutyl ester				•	2		atherie of attonio of the	
604 0.7 0.09 BZH 0.4 c-hloro-W-ethyl-1,3,5-triazine-2,4-diamine 613 7 0.09 BZH 0.4 candecanoic acid plus an unknown 613 7 0.09 BZH hexadecanoic acid plus an unknown 613 7 0.09 BZH hexadecanoic acid plus an unknown 613 0.7 0.09 BZH hexadecanoic acid plus an unknown 614 0.7 0.09 BZH 4. (methylsulfonyl)-1,3,5-triazine-2-yil amino]-2-methyl propanenitrile 626 0.7 0.09 BZH 4. (methylsulfonyl)-2,6-di-N,N-dipropyl benzeneamine 620 0.4 0.02 BZL bexadecanoic acid 620 0.4 0.02 BZL bexadecanoic acid 620 0.4 0.02 BZL bexadecanoic acid 620 0.4 0.03 BZL bexadecanoic acid 0.4		0.0-0.8			003	RZM		
604 0.7 009 B2H unknown phthalate 609 1 009 B2H unknown phthalate 609 1 009 B2H unknown phthalate 613 0.5 009 B2H 2-[(4-chloro-6-(ethylamino)-1,3,5- triazine-2-yl) aminoj-2-methyl propanenitrile 613 0.7 009 B2H 7-(methylamino)-1,3,5- triazine-2-yl) aminoj-2-methyl propanenitrile 613 0.7 009 B2H 7-(methylamino)-1,3,5- 14.0-15.0 609 0.4 002 B2L bis butyl ester phthalate 620 0.4 002 B2L bis butyl ester phthalate 620 0.4 002 B2L hexadecanoic acid 644 0.7 002 B2L hexadecanoic acid 644 0.7 003 B2L hexadecanoic acid 659 0.4 003 B2L hexadecanoic acid 659 0.4 003 B2L hexadecanoic acid 659 0.4 003 B2L hexadecanoic acid 659 0.4 003 B2L hexadecanoic acid 659 0.4 003 B2L hexadecanoic acid 659 0.4 003 B2L hexadecanoic acid 659 0.4 003 B2L hexadecanoic acid 659 0.4 003 B2L cetradecanoic acid 659 0.4 003 B2L hexadecanoic acid 651 0.4 003 B2L hexadecanoic acid 651 0.4 003 B2L hexadecanoic acid 651 0.4 003 B2L hexadecanoic acid 652 0.4 003 B2L hexadecanoic acid 653 0.4 003 B2L hexadecanoic acid 654 0.4 003 B2L hexadecanoic acid 655 0.4 003 B2L hexadecanoic acid 657 0.4 003 B2L hexadecanoic acid 658 0.4 003 B2L hexadecanoic acid 659 0.4 003 B2L hexadecanoic acid 650 0.4 003 B2L hexadecanoic acid 650 0.4 003 B2L hexadecanoic acid 650 0.4 003 B2L hexadecanoic acid 650 0.4 003 B2L hexadecanoic acid 650 0.4 003 B2L hexadecanoic acid 650 0.4 003 B2L hexadecanoic acid 650 0.4 003 B2L hexadecanoic acid 650 0.4 003 B2L hexadecanoic acid 650 0.4 003 B2L hexadecanoic acid 650 0.4 003 B2L hexadecanoic acid 650 0.4 003 B2L hexadecanoic acid 650 0.4 0.4 003 B2L hexadecanoic a			593	9.0	600	HZ4	6-chloro-N-ethvl-1.3.5-tr(azina-2.4-	4
604 0.7 009 B2H unknown phthalate 609 1							diagine	
613 7 009 BZH hexadecanoic acid plus an unknown 613 7 009 BZH hexadecanoic acid plus an unknown 626 0.5 009 BZH 2-[(4-chloro-6-(ethylamino)-1,3,5- trianine-2-yl) amino]-2-methyl 626 0.7 009 BZH 4-(methylaulfonyl)-2,6-di-M,N-dipropyl 635 0.7 009 BZH 4-(methylaulfonyl)-2,6-di-M,N-dipropyl 620 0.4 002 BZL bis butyl ester phthalate 620 0.4 002 BZL hexadecanoic acid 644 0.7 002 BZL hexadecanoic acid 644 0.7 002 BZL hexadecanoic acid 649 0.6 003 BZL hexadecanoic acid 609 0.6 003 BZL hexadecanoic acid 609 0.6 003 BZL hexadecanoic acid 619 0.3 003 BZL cetradecanoic acid 619 0.4 003 BZL cetradecanoic acid 619 0.4 003 BZL cetradecanoic acid 619 0.4 003 BZL cotadecanoic acid 619 0.4 003 BZL cetradecanoic acid 619 0.4 003 BZL nonanendioic acid 619 0.4 003			\$0	0.7	600	BZH	unknown phthalate	a,
626 0.5 009 BZH 2-[(4-chloro-6-(ethylamino)-1,3,5- triazine-2-yl amino]-2-methyl 626 0.5 009 BZH 4-(methylsulfonyl)-2-methyl 633 0.7 009 BZH 4-(methylsulfonyl)-2,6-di-N,N-dipropyl benzeneamine 635 0.7 009 BZH 4-(methylsulfonyl)-2,6-di-N,N-dipropyl benzeneamine 620 0.4 009 BZH alkene or a.cohol GT C-18 620 0.4 002 BZL hexadecanoic acid 644 0.7 002 BZL homanedioic acid, dioctyl ester 620 0.4 003 BZL hexadecanoic acid 609 0.6 003 BZL hexadecanoic acid 615 0.4 003 BZL hexadecanoic acid 615 0.4 003 BZL hexadecanoic acid 619 0.3 003 BZL nonamendioic acid, dibutyl ester 619 0.3 003 BZL aqualene 651 3 004 82L 2-[(4-chloro-6-(ethyl amino)-1,3,5- trianzin-2-yl) amino]-2-methyl 612 1 004 BZL 2-[(4-chloro-6-(ethyl amino)-1,3,5- trianzin-2-yl) amino]-2-methyl			609	-	600	ВЗН	hexadecanoic acid blus an unknown	D + unknown
626 0.5 009 B2H friazine-2-yl aminol-2-methyl propanenitrile 633 0.7 009 B2H f-(methylaulfonyl)-2,6-di-M,N-dipropyl 635 0.7 009 B2H f-(methylaulfonyl)-2,6-di-M,N-dipropyl 635 0.7 009 B2H falkene or alcohol GT C-18 14.0-15.0 609 0.4 002 B2L bis butyl ester phthalate 620 0.4 002 B2L hexadecanoic acid 644 0.7 002 B2L hexadecanoic acid 649 0.4 003 B2L hexadecanoic acid 609 0.4 003 B2L hexadecanoic acid 615 0.4 003 B2L hexadecanoic acid 615 0.4 003 B2L hexadecanoic acid 619 0.3 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3 003 B2L hexadecanoic acid 619 0.3			613	7	600	ВЗН	2-[(4-chloro-6-(ethylamino)-1 3 5-	
626 0.5 009 BZH remarkative propagamentarile 635 0.7 009 BZH remarkative propagamentarile 635 0.7 009 BZH remarkative phase of a cohol Gr C-18 0.4 0.2 BZL bis butyl ester phthalate 620 0.4 0.02 BZL bis butyl ester phthalate 644 0.7 0.02 BZL haxadecanoic acid 644 0.7 0.02 BZL haxadecanoic acid 609 0.4 0.03 BZL haxadecanoic acid 609 0.4 0.03 BZL haxadecanoic acid 609 0.4 0.03 BZL haxadecanoic acid 609 0.4 0.03 BZL haxadecanoic acid 615 0.4 0.03 BZL haxadecanoic acid 615 0.4 0.03 BZL haxadecanoic acid 615 0.4 0.03 BZL haxadecanoic acid 615 0.4 0.03 BZL haxadecanoic acid 615 0.4 0.03 BZL haxadecanoic acid 615 0.4 0.03 BZL haxadecanoic acid 615 0.4 0.03 BZL haxadecanoic acid 615 0.4 0.03 BZL haxadecanoic acid 615 0.4 0.03 BZL haxadecanoic acid 615 0.4 0.03 BZL squalene 651 3 0.03 BZL squalene 71,3,5-410ro-6-(ethyl amino)-1,3,5-41140ro-6-(ethyl amino)-1,3,5-41140ro-6-(ethyl amino)-2-methyl 615 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.						i	+ 1/4 CHANGO C (CC) 4884110/-1454-0-	
626 0.5 009 BZH 1-(methylsulfonyl)-2,6-di-N,N-dipropyl 635 0.7 009 BZH 1-(methylsulfonyl)-2,6-di-N,N-dipropyl benzeneamine 635 0.7 009 BZH 1-(methylsulfonyl)-2,6-di-N,N-dipropyl benzeneamine 620 0.4 009 BZH alkene or alcohol GT C-18 620 0.4 002 BZL hexadecanoic acid 644 0.7 002 BZL nonanedioic acid, dioctyl ester 650 0.4 003 BZL hexadecanoic acid 609 0.6 003 BZL hexadecanoic acid 615 0.4 003 BZL nonanendioic acid, dibutyl ester 619 0.3 003 BZL nonanendioic acid, dibutyl ester 619 0.3 003 BZL nonanendioic acid, dibutyl ester 619 0.3 003 BZL nonanendioic acid, dibutyl ester 619 0.3 003 BZL nonanendioic acid, dibutyl ester 619 0.3 003 BZL nonanendioic acid, dibutyl ester 619 0.3 003 BZL nonanendioic acid, dibutyl ester 619 0.3 003 BZL nonanendioic acid, dibutyl ester 619 0.3 003 BZL noctadecanoic acid 619 0.3 003 BZL nonanendioic acid, dibutyl ester 619 0.3 003 BZL noctadecanoic acid 619 0.3 003 BZL noctadecanoic acid 619 0.4 0001 BZL notadecanoic acid 619 0.3 003 BZL notadecanoic acid 619 0.3 003 BZL notadecanoic acid 619 0.4 0001 BZL notadecanoic acid 619 0.4 0001 BZL nonanendioic acid, dibutyl ester 619 0.4 0001 BZL notadecanoic acid 619 0.4 0001 BZL notadecanoic acid 619 0.4 0001 BZL notadecanoic acid 619 0.4 0001 BZL notadecanoic acid 619 0.4 0001 BZL notadecanoic acid 619 0.4 0001 BZL notadecanoic acid 619 0.4 0001 BZL notadecanoic acid 619 0.4 0001 BZL notadecanoic acid 619 0.4 0001 BZL notadecanoic acid 619 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL notadecanoic acid 610 0.4 0001 BZL no							criderine_z-yr/ aminoj-z-metnyi	
633 0.7 009 BZH 4-(methylsulfonyl)-2,6-di-M,N-dipropyl benzeneamine be			626	0.5	600	ВЗН	propalentitie	•
14.0-15.0 0.7 0.09 BZH BZH BENZENGAMINE 14.0-15.0 0.4 0.02 BZL bis butyl ester phthalate 620 0.4 0.02 BZL bis butyl ester phthalate 641 0.7 0.02 BZL nonanedioic acid 642 0.7 0.02 BZL nonanedioic acid 609 0.4 0.03 BZL hexadecanoic acid 609 0.4 0.03 BZL hexadecanoic acid 619 0.4 0.03 BZL nonanendioic acid 619 0.4 0.03 BZL nonanendioic acid 619 0.3 0.03 BZL nonanendioic acid 620 1 0.03 BZL nonanendioic acid 621 3 0.03 BZL squalene 621 3 0.04 BZL 2-[(4-chloro-6-(ethyl amino)-1,3,5-trianzin-2-y] amino]-2-methyl			633	0.7	600	ВЗН	1-(mothylanifonyli-2 K-di-M M-dintonyl	•
14.0-15.0 0.7 0.09 BZH alkene or alcohol GT C-18 14.0-15.0 609 0.4 0.02 BZL bis butyl ester phthalate 620 0.4 0.02 BZL bexadecanoic acid 644 0.7 0.02 BZL nonanedioic acid 648 0.7 0.05 BZH retradecanoic acid 659 0.4 0.03 BZL hexadecanoic acid 659 0.4 0.03 BZL hexadecanoic acid 615 0.4 0.03 BZL nonanendioic acid 615 0.4 0.03 BZL nonanendioic acid 615 0.4 0.03 BZL nonanendioic acid 619 0.3 0.03 BZL nonanendioic acid 619 0.3 0.03 BZL nonanendioic acid 620 0.4 0.03 BZL nonanendioic acid 621 3 0.03 BZL nonanendioic acid 621 3 0.04 8ZL 2-[(4-chloro-6-(ethyl amino)-1,3,5-trianzin-2-y]) amino]-2-methyl							horacocamino	
14.0-15.0 0.1 0.04 0.24 0.05 0.04 0.05 0.04 0.05 0.04 0.05 0.04 0.05 0.04 0.05 0.04 0.05 0.05 0.04 0.05 0.0			*13		000			
14.0-15.0 0.04 BZM BZM BZM BZM BZM BZD BZL BZL BZD			5		600	HZH	alkene or arcohol GT C-18	٩
609 0.4 002 BZL bis butyl ester phthalate 620 0.4 002 BZL hexadecanoic acid 644 0.7 002 BZL hexadecanoic acid 640 0.7 002 BZL nonanedioic acid, dioctyl ester 609 0.4 003 BZL hexadecanoic acid 609 1. 003 BZL hexadecanoic acid 619 0.4 003 BZL hexadecanoic acid 619 0.4 003 BZL hexadecanoic acid 619 0.3 003 BZL hexadecanoic acid 619 0.3 003 BZL hexadecanoic acid 619 0.3 003 BZL hexadecanoic acid 619 0.3 003 BZL hexadecanoic acid 619 0.4 003 BZL hexadecanoic acid 619 0.3 004 BZL catadecanoic acid 619 0.3 004 BZL squalene 621 1 004 BZL 2-[(4-chloro-6-(ethyl amino)-1,3,5-trianzin-2-yl) amino]-2-methyl		14.0-15.0			•00	BZM		
620 0.4 002 BZL blutyl easter printalate 644 0.7 002 BZL nonanedioic acid dioctyl ester 645 0.7 002 BZL nonanedioic acid dioctyl ester 658 0.4 003 BZL hexadecanoic acid 659 0.4 003 BZL hexadecanoic acid 615 0.4 003 BZL nonanendioic acid 615 0.4 003 BZL nonanendioic acid 615 0.4 003 BZL nonanendioic acid 619 0.3 003 BZL nonanendioic acid 619 0.3 003 BZL nonanendioic acid 619 0.3 003 BZL nonanendioic acid 619 0.4 000 BZL nonanendioic acid 619 0.3 003 BZL nonanendioic acid 619 0.3 003 BZL nonanendioic acid 619 0.3 003 BZL nonanendioic acid 619 0.3 003 BZL nonanendioic acid 619 0.3 003 BZL nonanendioic acid 619 0.3 003 BZL nonanendioic acid 619 0.3 003 BZL nonanendioic acid 619 0.3 003 BZL nonanendioic acid 610 0.3 003 BZL nonanendioic acid 610 0.3 003 BZL nonanendioic acid 610 0.3 003 BZL nonanendioic acid 610 0.3 003 BZL nonanendioic acid 610 0.3 003 BZL nonanendioic acid 610 0.4 000 BZL notadecanoic acid			609	0.4	000	140	And the fact that the fact tha	
4.0-5.0 4.0-5.0 598 0.4 0.05 BZL nonanedioic acid, dioctyl ester 0.6 0.9 0.4 0.03 BZL hexadecanoic acid 609 1 003 BZL hexadecanoic acid 615 0.4 003 BZL nonanendioic acid dioctyl ester 1 003 BZL hexadecanoic acid 615 0.4 003 BZL nonanendioic acid dioutyl ester 619 0.3 0.04 0.03 BZL nonanendioic acid dibutyl ester 619 0.3 0.04 0.03 BZL octadecanoic acid dibutyl ester 619 0.4 0.04 0.03 BZL octadecanoic acid dibutyl ester 619 0.4 0.04 0.03 BZL octadecanoic acid dibutyl ester 619 0.4 0.04 0.03 BZL octadecanoic acid dibutyl ester 1 004 BZL octadecanoic acid dibutyl ester cotadecanoic acid dibutyl ester 1 004 BZL octadecanoic acid dibutyl ester cotadecanoic acid dibutyl ester cotadecanoic acid dibutyl ester 619 0.3 0.4 0.04 0.03 BZL octadecanoic acid dibutyl ester cotadecanoic acid dibutyl ester			620	. 4.0	200	120	bis outy, ester phinalate	٠ ن ،
4.0-5.0 598 0.4 0.05 BZh tetradecanoic acid 608 0.6 0.03 BZL hexadecanoic acid 609 1 0.03 BZL hexadecanoic acid 615 0.4 0.03 BZL hexadecanoic acid 615 0.4 0.03 BZL hexadecanoic acid 619 0.3 0.03 BZL cotadecanoic acid dibutyl ester 619 0.3 0.03 BZL squalene 651 3 003 BZL squalene 651 1 004 003 BZL squalene 651 1 004 BZL ctianin.2-yl) amino)-1,3,5-			177				הפאסתפריםווסור מרזת	a
6.0-5.0 598 0.4 003 82L bazadecanoic acid 609 1 003 82L bazadecanoic acid 615 0.4 003 82L bazadecanoic acid 615 0.4 003 82L bazadecanoic acid 619 0.3 003 82L cotadecanoic acid dibutyl ester 619 0.3 003 82L 004 003 82L 005 84.0-9.0 612 1 004 82L 005 82L 005 82L 006 82L 007 82L 0			•	•	700	729	nonanedioic acid, dioctyl ester	_
598 0.4 003 BZL tetradecanoic acid 609 0.6 003 BZL hexadecanoic acid 609 1 003 BZL hexadecanoic acid 615 0.4 003 BZL nonamendio: acid, dibutyl ester 619 0.3 003 BZL octadecanoic acid 651 3 003 BZL squalene 651 1 004 BZL 2-[(4-chloro-6-(ethyl amino)-1,3,5-trianzin-2-y]) amino)-1,3,5-trianzin-2-y] amino)-1,3,5-	9010	4.0-5.0			005	BZM		~
608 0.6 003 BZL hexadecanoic acid 609 1 003 BZL hexadecanoic acid 615 0.4 003 BZL nonamendioic acid, dibutyl ester 619 0.3 003 BZL octadecanoic acid, dibutyl ester 651 3 003 BZL squalene 651 3 004 BZL 2-[(4-chloro-6-(ethyl amino)-1,3,5- trianzin-2-y]) amino)-1,3,5-			298	0.4	003	RZI.	tetradecanoic acid	: -
609 1 003 BZL hexadecanoic acid 615 0.4 003 BZL nonanendioic acid, dibutyl ester 619 0.3 003 BZL notadecanoic acid 651 3 003 BZL squalene 651 3 004 BZL 2-[(4-chloro-6-(ethyl amino)-1,3,5- trianzin-2-yl) amino)-1,3,5-			909	9.0	000	BZI.	Peradenancio acid	
615 0.4 003 BZL nonanendioic acid, dibutyl ester 619 0.3 003 BZL octadecanoic acid, dibutyl ester 651 3 003 BZL squalene 651 3 004 BZL 2-[(4-chloro-6-(ethyl amino)-1,3,5- trianzin.2-yl) amino)-1,3,5-			609	_		B71.		•
619 0.3 003 B2L nonamenator acid, dibutyl ester 651 3 003 B2L squalene 651 3 003 B2L squalene 606 B2M 2-{(4-chloro-6-(ethyl amino)-1,3,5- 612 1 004 B2L trianzin.2-yl) amino)-1,3,5-			615	•				•
651 3 003 BZL squalene 651 3 003 BZL squalene 006 BZM 612 1 004 BZL 2-{(4-chloro-6-{ethyl amino}-1,3,5-					F 000	779		Δ.
651 3 003 BZL 006 BZM 612 1 004 BZL			670	r. n	600	728	octadecanoic acid	۵
612 1 004 BZL M28 000			651	т	003	BZL	squalene	
612 1 004 BZL		8.0-9.0			900	87M		•
			612	-	900	12.4	2-1 (4-chloro-f-fother)	•
			<u> </u>	•	5	3	trianzin-2-1) amino]-2-methy]	

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A - No positive identification
C - Plasticizer
D - Derived from natural products
F - Low concentration
GT - Greater than
K - None detected
• - Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 10 of 35.

*

- London	4404	Makes	401400000	01000		4 : 3 : 4 : 5 : 6	
Mumber	(35)	Number	*(mdd)	Number	Fot	Identification	Comments
C80109	8.0-9.0	632	~	004	128	4-(methylsulfonyl)-2,6-dinotro-N,N-	
						dipropyl benzenamine	
		635	9.4	004	BZL	stearyl alcohol	۵
		644	6.0	₽00	BZL	nonanedioic acid, dioctyl ester	Q
	13.0-14.0			007	W28		ĸ
		615	0.5	900	728	nonanedioic acid, dibutyl ester	۵
		644	0.5	900	BZL	nonanedioic acid, dibutyl ester	۵
	18.0-19.0			800	B2M		×
		609	9.0	900	BZL	hexadecanoic acid	Q
		612		900	BZL	2-[(4-chloro-6-(ethyl amino)-1,3,5-	
						triazin-2-yl) amino]-2-methyl	
		41,	•	,	į	proparenterite	
		0.00	6.0	900	779	nexanedioic acid, dioccyl ester	٠. خ
		633	97	900	728	4-{metnylaultonyl}-Z,6-dinitro-N,N-	
		•		900		diplopy, benzenamine	4
		750	f. 0	900	779		< 1
		644	7	900	778		ο,
		648	4.0	900	7 2 8	unknown alkene or fatty acid	Δ.
		650	9.0	900	729	squalene	۵
	22.0-23.0			002	BZR		×
		909	0.4	007	BZL	dibutyl ester phthalate	ر ، ا
		619	9.0	007	BZL	hexadecanoic acid	۵
		630	0.9	007	BZL	hexadecanoic acid	۵
		636	₽.0	000	BZL	stearyl alcohol	۵
		650	0.5	007	32E	squalene	۵
CS0110**	3.0	576	07	007	BZH	trichlorobenzenamin- isomer	
		577	20	000	HZ8		<
		613	70	007	BZH	2-[(4-chloro-6-(ethyl amino)-1,3,5-	
						triazin-2-y1) amino]-2-methyl probanenitrile	
		631	30	007	BZH		<
		691	S E	200	HZ#		: «
			0	700		Contracts around the	
		•	0.0	200	U70 .	TILKIOWII GLOMALIA	

A - No positive identification
C - Plasticizer
D - Derived from natural products
F - Low concentration
K - None detected

• - Values reported are blank corrected

• - Grab sample

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 11 of 35.

Borehole	Depth	'nknown	Concentration	Sample		Best-fit	
Number	(tr)	Mumber	• (mod)	Number	Ę	Identification	Comments
CS0111	4.0-5.0	610	••0	002	CAM	unknown phthalate	1 3
		612		005	САМ	2-{(4-chloro-6-(ethyl amino)-1,3,5-	•
						triazin-2-yl) amino]-2-methyl	
						propanenitrile	
		624	-	007	CAM		~
		632	0.5	005	CAM	4-(methylsulfonyl)-2,6-dinitro-N,H-	
						dipropyl benzenamine	
		636	7.0	007	CAM	alkene, C-25	
		651	-	005	CAM	7-one, 3, 12-dihydro-6-methoxy-3, 3, 12-	
						trimethyl 7H-pyrano(2,3-C) acridin	
C80201	7.8-8.8	102	300	900	B 2R	dichloropropane isomer	
		109	20	002	BZR	bromochloropropane isomer	
		115	30	900	82R	dibromopropene isomer	
		116	80	900	BZR	2,2-dibromopropane	
		132	•	900	BZR	chlorinated propane	
		134	400	900	828	dibromochloropropane isomer	
		138	30	900	BZR	3-methyl-l-ethyl benzene	
		142	100	200	BZR	dibromochloropropane isomer	
		535	•	010	728	alkane, C-9 plus an unknown	
		536	s	010	BZL	ethylmethyl benzene isomer	
		543	10	010	BZL	branched alkane, C-10	
		544	•	010	728	butylcyclohexane	
		553	ın	010	BZL	branched hydrocarbon, C-11	
		554	07	010	BZL	2-(dichloromethyl)-l, 3-dioxolane or	
						silane	
		555	m	010	BZL	cyclic alkane, C-11	
		556	m	010	BZT	branched alkane, C-11	
		260	10	010	BZL	branched alkane, C-11	
		561	v	010	BZL	hexachloro-1,3-butadiene isomer	
		266	7	010	BZL	polyhalogenated hydrocarbon	
		569	6 0	010	BZĽ	hydrocarbon with 5 chlorines	
		583	'n	010	12 8	analog of 1-phenyl-1,2-ethandiol	
		589	•	010	728	polychlorinated alkyl benzene	
		591	φ	010	BZĽ	octachlorocyclopentene	
		593	7	010	128	polychlorinated alkyl benzene	
		595	so.	010	728	chlorinated alkyl benzene	
		599	07	010	BZĽ	tetrabromohexane isomer	
		601	10	010	12 8	bridged polycyclic hexachlorinated	
		į	ı	;	į	hydrocarbon	
		6 04	'n	010	728	bridged polycyclic nexachlorinated	

A - No positive identification
C - Plasticizer
F - Low concentration
• - Values reported are blank corrected
Site CS-SP
4924A/1041A
Rev. 7/01/88

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 12 of 35.

# 607 60 619 10 615 30 615 30 617 50 618 10 634 4 636 20 634 4 636 20 109 2 1109 2 1109 2 1109 2 1109 2 1109 2 1109 2 1109 2 1100 100 1100	Interval	and a feet	Concentration	Sample		Best-fit		
7.8-8.6 607 600 010 82L 609 615 610 010 82L 615 615 30 010 82L 615 617 50 010 82L 618 617 50 010 82L 618 617 50 010 82L 618 617 50 010 82L 618 617 50 010 82L 618 618 618 618 618 618 618 618 618 618	Mumber	(ft)	Number	(bpm)*	Number	Ę	Identification	Comments
7.8-8.6 607 60 010 B2L P 615 30 010 B2L P 616 10 10 010 B2L P 617 50 010 B2L P 618 10 010 B2L P 634 4 010 B2L P 635 20 010 B2L P 636 20 010 B2L P 636 20 010 B2L P 637 20 006 B2R P 638 7 7.8-8.6 109 B2L P 638 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8								
619 10 010 82L 6 615 30 010 82L 8 618 10 010 82L 8 636 20 010 82L 6 636 20 010 82L 6 636 20 010 82L 6 636 20 010 82L 6 636 20 010 82L 6 636 20 006 82R 6 638 82L 6 638	-80.20.)	7.8-8.8	607	09	010	BZL	hydrocarbon with 3 chiorines	
610 10 82L 615 616 615 617 50 010 82L 618 618 10 010 82L 618 10 01			609	10	010	BZ[bridged polycyclic hexachlorinated	
615 10 010 82L 615 615 617 50 010 82L 618 10 010 82L 618 10 010 82L 618 10 010 82L 618 10 010 82L 618 100 010 010 82L 618 100							hydrocarbon	
615 30 010 82L b 618 10 010 82L b 634 4 010 010 82L b 634 102 30 010 82L b 103 2 006 82R b 115 2 006 82R b 115 2 006 82R b 115 2 006 82R b 115 3 0 006 82R b 116 30 003 82R b 116 30 003 82R b 116 30 003 82R b 116 30 003 82R b 117 30 003 82R b 118 30 008 82L b 119 30 008 82L b 110 30 008 82L b 110			410	10	010	728	aromatic hydrocarbon with 3 chlorines	
6.17 5.0 010 82L to 6.16 1.0 010 82L to 6.34 4 010 82L to 6.36 20 010 82L to 6.36 20 010 82L to 6.36 20 010 82L to 6.36 20 010 82L to 6.36 20 010 82L to 6.36 20 010 82R to 6.36 20 010 82R to 6.36 20 010 82R to 6.36 20 010 82L to 6.36 20 20 20 20 20 20 20 20 20 20 20 20 20			919	2	010	BZL	bridged polycyclic hexachlorinated	
617 50 010 82L, E 618 10 010 82L, E 634 4 010 82L 636 20 010 82L 109 2 006 82R 115 2 006 82R 115 2 006 82R 115 2 006 82R 116 10 003 82R 116 10 003 82R 116 10 003 82R 116 10 003 82R 116 10 003 82R 117 10 003 82R 118 10 003 82R 118 10 003 82L 118 10 008 82L 118 1			c Te	3			hydrocarbon	
6.18 10 010 82L 6 6.34 4 010 82L 6 6.35 20 010 82L 6 10.5 10.5 2 006 82R 6 11.5 2 006 82R 6 11.5 10.0 003 82R 6 11.6 10.0 003 82R 82L 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.				Ş	0.0		bridged polycyclic hexachlorinated	
634 4 010 62L E 634 4 010 82L E 636 20 010 82L E 636 20 010 82L E 109 2 006 82R E 115 2 006 82R E 115 2 006 82R E 115 100 10 003 82R E 116 10 003 82R E 116 10 003 82R E 116 10 003 82R E 116 10 003 82R E 117 10 008 82L E 118 10			10	Š			hydrocarbon	
634 4 010 B2L E 634 4 010 B2L E 635 20 010 B2L E 115 30 006 B2R E 115 2 006 B2R E 115 2 006 B2R E 115 2 006 B2R E 115 109 7 003 B2R E 116 100 003 B2R E 118 10 003 B2R E 119 10 003 B2R E 119 10 003 B2R E 110 10 003 B2R E 110 10 003 B2R E 1110 10 008 B2L E 1110 10 0			Š	9	95	22.0	hridged polycyclic hexachlorinated	
634 4 010 BZL 636 20 010 BZL PBZL 7.8-8.8 102 30 006 BZR 115 2 006 BZR 115 2 006 BZR 115 2 006 BZR 115 2 006 BZR 116 10 003 BZL 116 4 008 BZL 116 4 008 BZL 116 10 008 BZL 116 10 008<			8 19	07		1	budrocarbon	
636 20 010 82L 636 20 010 82L 102 30 006 82R 115 2 006 82R 115 2 006 82R 115 2 006 82R 115 2 006 82R 116 100 003 82R 116 10 003 82R 118 10 003 82R 118 10 003 82R 118 10 003 82R 119 10 003 82R 110 003 82R 111 10 008 82L					,	į	Ilyanocarposi	
7.8-8.8 102 30 006 BZR 109 2 006 BZR 1135 2 006 BZR 1135 2 006 BZR 1135 2 006 BZR 1135 2 006 BZR 1135 2 006 BZR 1136 109 100 003 BZR 1136 100			634	•	010	128	Dilaged polycyclic terractions	
7.8-8.8 102 30 006 BZR 109 2 006 BZR 115 2 006 BZR 1135 7 006 BZR 1143 2 006 BZR 119 119 119 119 119 119 119 119 119 11							hydrocarbon	
7.8-8.6 102 30 006 B2R 115 2 006 B2R 115 2 006 B2R 115 2 006 B2R 115 2 006 B2R 115 2 006 B2R 115 2 006 B2R 110 003 B2R 110 003 B2R 110 003 B2R 110 003 B2R 110 003 B2R 110 003 B2R 110 003 B2R 110 003 B2R 110 003 B2R 110 003 B2R 110 008 B2L 110 008			989	20	010	BZL	bridged polycyclic hexachlorinated	
7.8-8.8 102 30 006 BZR 115 2 006 BZR 115 2 006 BZR 115 2 006 BZR 115 2 006 BZR 115 2 006 BZR 115 2 006 BZR 110 003 BZR 110 003 BZR 110 003 BZR 110 003 BZR 110 003 BZR 110 003 BZR 110 003 BZR 110 003 BZR 110 003 BZR 110 003 BZR 110 003 BZR 110 003 BZR 110 003 BZR 110 003 BZR 110 008 BZL 110 008			}				hydrocarbon	
7.8-8.8 102 2 006 BZR 115 2 006 BZR 115 2 006 BZR 115 2 006 BZR 116 100 003 BZR 116 100 003 BZR 116 100 003 BZR 116 100 003 BZR 116 100 003 BZR 116 100 003 BZR 117 116 100 003 BZR 117 116 100 003 BZR 117 117 117 117 117 117 117 117 117 11	,	•		ć	900	22	dichloropropene isomer	
109 2 006 BZR 115 2 006 BZR 135 7 006 BZR 143 2 006 BZR 109 7 003 BZR 116 10 003 BZR 136 30 003 BZR 136 30 003 BZR 535 6 003 BZR 536 9 008 BZL 536 4 008 BZL 536 4 008 BZL 537 30 008 BZL 538 6 008 BZL 539 6 008 BZL 554 7 008 BZL 554 7 008 BZL 556 6 008 BZL 550 20 008 BZL 560 20 008 BZL 561 30 008 BZL 562 7 008 BZL 571 10 008 BZL 571 10 008 BZL 571 10 008 BZL	C80202	7.8-8.8	707	2				
115 2 006 BZR 135 7 006 BZR 143 10 003 BZR 116 10 003 BZR 118 10 003 BZR 119 003 BZL BZL 110 004 BZL B			109	7	900	BZK	Diomor americano orugono de	
135 7 006 BZR 143 2 006 BZR 102 100 003 BZR 109 7 003 BZR 136 10 003 BZR 136 30 003 BZR 143 10 003 BZR 143 10 003 BZR 535 6 008 BZL 536 9 008 BZL 546 4 008 BZL 553 10 008 BZL 554 4 008 BZL 554 7 008 BZL 556 6 008 BZL 556 20 008 BZL 556 20 008 BZL 560 20 008 BZL 563 5 008 BZL 569 9 008 BZL 571 10 008 BZL 573 10 008 BZL 574 1 008 BZL 573 1 008 BZL 574 1 008 BZL			115	7	900	BZR	dibromochloropropene isomer	
7.8-8.6 102 100 003 BZR 116 10 003 BZR 535 6 008 BZL 537 30 008 BZL 538 6 008 BZL 546 4 008 BZL 554 4 008 BZL 554 4 008 BZL 554 7 008 BZL 556 6 008 BZL 559 6 008 BZL 560 20 008 BZL 561 30 008 BZL 563 5 008 BZL 569 9 008 BZL 569 9 008 BZL 571 10 008 BZL 574 10 008 BZL 574 10 008 BZL 574 10 008 BZL 569 9 008 B	•		135	7	900	BZR	dibromochlorpropane isomer	
7.8-8.6 102 100 003 BZR 116 10 008 BZL 116 10 008 BZL 116 10 008 BZL 116 10 008 BZL 116 10 008 BZL 116 10 008 BZL 116 10 008 BZL 116 10 008 BZL 116 116 116 116 116 116 116 116 116 11			143	. 7	900	828	dibromochloropropane isomer	
7.6-8.8 102 100 003 BZR 109 116 110 003 BZR 110 1116 110 003 BZR 1116 110 003 BZR 1116 110 003 BZR 1119 1110 003 BZR 1119 1110 003 BZR 1119 1110 008 BZL 1119 1110 008 BZL 1119 1110 008 BZL 1110 008 BZ								
109 7 003 BZR 116 10 003 BZR 136 30 003 BZR 143 10 003 BZR 535 6 008 BZL 536 9 008 BZL 537 30 008 BZL 538 6 008 BZL 546 4 008 BZL 553 10 008 BZL 554 7 008 BZL 556 6 008 BZL 556 20 008 BZL 560 20 008 BZL 561 30 008 BZL 563 5 008 BZL 569 7 008 BZL 569 9 008 BZL 569 9 008 BZL 569 9 008 BZL 571 10 008 BZL 574 10 008 BZL 574 10 008 BZL 574 10 008 BZL 574 10 008 BZL	C80203	7.8-8.8	102	100	003	BZR	dichloropropene isomer	
10 003 BZR 10 003 BZR 10 003 BZR 6 008 BZL 6 008 BZL 7 008 BZL			109	7	003	828	bromochloropropane isomer	
30 003 BZR 10 003 BZR 6 008 BZL 6 008 BZL 7 008 BZL 10 008 BZL 10 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL			1.16	10	003	82B	2,3-dibromopropene	
10 003 B2R 6 008 B2L 30 008 B2L 6 008 B2L 10 008 B2L 10 008 B2L 7 008 B2L 7 008 B2L 6 008 B2L 6 008 B2L 6 008 B2L 7 008 B2L 7 008 B2L 8 008 B2L 9 008 B2L 9 008 B2L 9 008 B2L 9 008 B2L 9 008 B2L 9 008 B2L 9 008 B2L 9 008 B2L 9 008 B2L			116	9	003	BZR	dibromochloropropane isomer	
6 008 BZL 30 008 BZL 4 008 BZL 4 008 BZL 10 008 BZL 10 008 BZL 7 008 BZL 7 008 BZL 20 008 BZL				2 2	003	BZR	dibromochloropropane isomer	
9 008 BZL 4 008 BZL 10 008 BZL 40 008 BZL 40 008 BZL 7 008 BZL 7 008 BZL 6 008 BZL 6 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 7 008 BZL 9 008 BZL 9 008 BZL 9 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL			7	2 4	800	128	unknown alkane and alkyl benzene	
30 008 82L 6 008 82L 10 008 82L 40 008 82L 7 008 82L 6 008 82L 6 008 82L 6 008 82L 20 008 82L 30 008 82L 5 008 82L 7 008 82L 9 008 82L 7 008 82L 9 008 82L 9 008 82L 10 008 82L 9 008 82L 10 008			22.0	, 4		921	ethylmethyl benzene isomer	
6 008 BZL 40 008 BZL 40 008 BZL 7 008 BZL 6 008 BZL 6 008 BZL 6 008 BZL 20 008 BZL 20 008 BZL 20 008 BZL 7 008 BZL 9 008 BZL 7 008 BZL 9 008 BZL 9 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL			920	, ,	800	128	polybroginated chloropropane	
4 008 BZL 10 008 BZL 40 008 BZL 7 008 BZL 6 008 BZL 20 008 BZL 20 008 BZL 20 008 BZL 20 008 BZL 5 008 BZL 7 008 BZL 9 008 BZL 9 008 BZL 9 008 BZL 9 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL			755) 1	8 6	BZI.	methylpropyl cyclohexane isomer	
10 008 B2L 40 008 B2L 7 008 B2L 6 008 B2L 6 008 B2L 20 008 B2L 20 008 B2L 30 008 B2L 5 008 B2L 7 008 B2L 9 008 B2L 9 008 B2L 9 008 B2L 9 008 B2L 10 008 B2L 10 008 B2L 10 008 B2L 10 008 B2L 10 008 B2L			979	•	800	BZL	decahydronaphthalene	
40 008 BZL 7 008 BZL 6 008 BZL 6 008 BZL 20 008 BZL 30 008 BZL 5 008 BZL 7 008 BZL 7 008 BZL 9 008 BZL 9 008 BZL 9 008 BZL 9 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL			9	, 4	800	P. 2.	alkane, C-10	
7 008 BZL 6 008 BZL 20 008 BZL 30 008 BZL 30 008 BZL 7 008 BZL 7 008 BZL 9 008 BZL 9 008 BZL 9 008 BZL 10 008 BZL 11 008 BZL 12 008 BZL 14 008 BZL 15 008 BZL 16 008 BZL 17 008 BZL 18 008 BZL 19 008 BZL 10 008 BZL 10 008 BZL 10 008 BZL			553	3 4	9 6	124	unknown silicon containing hydrocarbon	
6 008 BZL branched alkane, C-11 plus benzene 6 008 BZL naphthalene 20 008 BZL branched alkane, C-12 30 008 BZL branched alkane, C-12 30 008 BZL branched alkane, C-12 5 008 BZL branched alkane, C-12 7 008 BZL branched alkane, C-12 7 008 BZL pranchloro-1,3-butadiene is 8 008 BZL pentachlorocycloheradiene 9 008 BZL pentachlorocycloheradiene 10 008 BZL tetrachlorochaniline 10 008 BZL alkory aromatic			554	? •	9 6	124	enbatituted evoluhexane	
5 008 82L 20 008 82L 30 008 82L 5 008 82L 7 008 82L 9 008 82L 9 008 82L 9 008 82L 9 008 82L 10 008 82L 1			254	• •	9 6		branched alkane, C-11 plus C-4 alkyl	
6 008 BZL 20 008 BZL 30 008 BZL 5 008 BZL 9 008 BZL 10 008 B			226	٥	900	3		
20 008 821 30 008 821 5 008 821 7 008 821 7 008 821 8 008 821 8 008 821 10 008 821 10 008 821 10 008 821				,	9	27.0		
20 008 82L 30 008 82L 7 008 82L 9 008 82L 9 008 82L 10 008 82L 10 008 82L 10 008 82L			559	۰	900	2 6	hearthad altebra (-12	
30 008 821 12 008 821 12 008 821 13 008 821 14 008 821 15 008 821 16 008 821			260	20	900	770	Franchiston 3-butadiene isomer	
5 008 BZL 7 008 BZL 9 008 BZL 10 008 BZL 10 008 BZL			561	30	900	729	Sex desired Lys-December 1999	
7 008 BZL 9 008 BZL 10 008 BZL 10 008 BZL			563	'n	800	BZL	alkane with 6 chiotines	
90 008 B2L 10 008 B2L 10 008 B2L			266	7	800	BZL	alkane with 6 chlorines	
8 008 BZL 10 008 BZL 4 008 BZL			9	•	900	BZL	pentachlorocyclohexadiene	
10 008 B2L				•	900	BZL	possibly bromoaniline	
728 800 BZF			7/5	, =	900	BZL	tetrachlorobenzene isomer	
			•	7	800	BZL	alkoxy aromatic	

^{. -} Values reported are blank corrected

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Table CS-SP-11. Tentative identification of Nontarget Compounds. Page 13 of 35.

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o lo do a de	Interval	not a dell	and the state of	o Lucia		4 TYPE	
			CONCERNICACION	D TOLERON	:		
MUNICIPAL	(22)	мимоет	" (wdd)	Number	3	Identification	Comments
CS0203	7.8-8.8	286	10	800	728	alkane with 5 chlorines	
		589	•	800	728	alkane with 5 chlorines	
		591	30	800	BZL	octachlorocyclopentene	
		599	07	900	BZL	tetrabromohexane isomer	
		109	09	900	728	isomer of aldrin or isodrin	
		604	•	900	32F	bridged polycyclicpolychlorinated	
						hydrocarbon	
		607	07	900	BZL ,	hydrocarbon with 3 chlorines	•
		607	10	800	728	hydrocarbon with 3 chlorines	
		610	٠	800	BZL		D + unknown
		613	20	900	BZL	bridged polycyclic polychlorinated	
						budrocerbos	
		615	60	900	BZL	nyarocarbon polycyclic hydrocarbon	
		625	φ	800	BZE	heptachlorinated polycyclic hydrocarbon	
		626	'n	800	BZL	bridged polychlorinated polycyclic hydrocarbon	ocarbon
		627	'n	800	128	isomer of aldrin	
		634	•	800	BZL	isomer of endrin	
		615		800	B21.	bridged polychloringted polycyclic budrocarbon	notrace
			? -			nateons of originated bidrocerbon	
		7.0	•	900	1	unknown cittot inaced ingot ocatioon	
CS0204	7.8-6.8	102	09	•00	BZR	dichloropropene isomer	
		109	1	004	BZR	bromochloropropane isomer	
		115	10	004	BZR	2,3-dibromopropene	
		11	· ~	7	RZB	ungaturated hydrocarbon	
		175		2	0.0	dibrosoft Orongone decem	
		677	0 1	500	2 6 2 6 2 6		
		143	0,	004	¥29	dibromochiopopane isomer	
		536	a	600	B2 F	ethylmethyl benzene isomer	
		536	10	600	BZL	dibromochlorinated propane isomer	
		541	•	600	72 9	dibromochlorinated propane isomer	
		553	20	600	728	possibly silane or 2-polychloromethyl-1,3-	۳.
						dioxolane	
		554	•	600	728	unknown cyclic hydrocarbon	
		557	٠	600	728	unknown polycyclic bridged hydrocarbon	
		260	7	600	BZĽ	alkane, C-12	
		561	20	600	728	hexachloro-l, 3-butadiene isomer	
		569	•	600	BZL	pentachloro cyclopentadiene	
		571	•	600	BZL	possibly bromoaniline	
		574	6	600	728	tetrachlorobenzene isomer	
		286	0.0	600	BZL	pentachloroethane	
		685	i 🛶	600	BZL	alkane with 6 chlorines	
		165	20	600	BZL	octachlorocyclopentene	
				600		reaction of the state of	
		299	07	COO	1770	tert ablomonexane 180met	

Derived from natural productsValues reported are blank corrected

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 14 of 35.

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Borehole	Depth	Unknown	Concentration	Sample		
Number	(ft)	Number	*(mdd)	Number	Fot	Identification
70000	0 0	£03	9	600	728	bridged polycyclic polychlorinated hydrocarbon
20700		709	, eu	600	BZL	polycyclic polychlorinated hydrocarbon
		6 07	4	600	BZL	hydrocarbon with 2 chlorines
		607	; do	600	728	hydrocarbon with 2 chlorines
		519	ve	600	728	unknown polychlorinated hydrocarbon
		625	, 64	600	728	bridged polycyclic hexachlorinated hydrocarbon
		623	. =	600	BZL	bridged polycyclic hexachlorinated hydrocarbon
		635	20	600	BZL	bridged polycyclic hexachlorinated hydrocarbon
	6	cer	9	200	828	dichloropropene isomer
C20702	0.0.	192	2 6	000	B2R	dibromochloropropane isomer
			;	<u>.</u>		
CENTOR	7.8-8.8	102	7	800	BZR	dichloropropene isomer
		135	•	800	82B	dibromochloropropane tsomer
CS0207	7.8-8.8			005	920	×
	11.8-12.8	8	700	003	BZU	unsaturated alicyclic nyorocarbon
		88	•	003	DZG	1,3-dichloropropene
		102	500	003	BZU	bromochloropropane isomer
		109	4	003	BZO	bromochloropropane isomer
		=	9	003	BZO	unsaturated alicyclic hydrocarbon
		115	9	003	BZU	2,3-bromopropene
		128	400	003	BZO	unknown aromatic
		135	92	003	BZU	dibromochloropropane isomer
		143	20	003	n z 8	dibromochloropropane isomer
				;	į	*
CS0208	7.8-8.8			604	028	:
		, 61	66	500	BZG	dichloropropene isomer
	11.6-12.6	161	2 2	002	BZU	octane isomer
					ě	×
CS0301	11.5-12.5			800	ץ לא	
		550	20	800	S	
		557	20	800	CAC	יייי לייייי פרוניסטודסוסדים איייייי פאריסאר מיייייייייייייייייייייייייייייייייייי
		563	06	800	CAC	with 5
		563	100	800	CAC	0
		570	100	800	CAC	with 5
		9	70	900	CAC	•
		965	; 6	800	CAC	unknown with 4 chlorines
			: 5	800	CAC	chlordene
		700	e d	900	CAC	Y
		_				

A - No positive identification
R - None detected
- - Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Montarget Compounds. Page 15 of 35.

Borehole	Depth	Unknown	Concentration	Samole		Best-fit	
Number	(££)	Number	, (wdd)	Number	Lot	Identification	Comments
CS0301	11.5-12.5	909	9	800	C Y C		~
! !		607	: :	800	CAC	unknown with 4 chlorines	ł
		627	70	800	CAC		<
		637	10	800	CAC		⋖
CS0302	11.5-12.5			005	CAP		*
		556	08	600	CAC	1,2,3,4-tetrachloro-1,3-cyclopentadiene	
			;	•	;	or isomer	
		261	9	600	CAC	1,2,3,4-tetrachloro-1,3-cyclopentadiene	
		863	CCC	8	240	or isomer	
		562	300	600	O Y O	'n	
		570	100	600	CAC	6	
		296	100	600	CAC	unknown with 5 chlorines	
		601	100	600	CAC		
		604	100	600	CAC		~
CS0303	11.5-12.5			003	CAP		=
		562	80	010	CAC	unknown with 5 chlorines	
		262	10	010	CAC	S	
		570	70	010	CAC	unknown with 5 chlorines	
1050304	11.5-12.5	143	G.	*00	CAP	unknown with 4 chlorines	
,		156))	700	Y.	Dentachloro-1-Drobene	
		163	, ~	900	CAP	unknown with 4 chlorines	
		186	, Ç	00	CAP.	1,1,2,3,4,4-hexachloro-1,3-butadiene	
		199		004	CAP	pentachloro-1,3-butadiene	
		561	30	005	CAD	1, 2, 3, 4-tetrachloro-1, 3-cyclopentadiene	
		561	70	007	CYD	1,1,2,3,4,4-hexachloro-1,3-butadiene	
		295	97	005	CAD	hydrocarbon with 3 chlorines	
		568	10	005	CAB	pentachlorocyclohexane	
		999	07	007	CAD	hydrocarbon with 5 chlorines	
		572	•	002	CAD	hexachlorobutadiene isomer	
		585	01	005	CAD		
		290	70	007	CAD	2,3,4,5-tetrachloro-3a,6,7,7a-tetra-	
						hydro-1,6-methano-1H-indene	
	÷	591	vo	002	CAD	<pre>1,2-dichloro-3,4-bis(dichloromethylene) cvclobutane</pre>	
		594	٠	002	CAD	tetrachlorocyclopropene	
		595	20	007	CAD	bicyclo(2.2.2)oct-5-ene-2,3-dicarbon-	
			;			itrile	
		596	80	002	CAD	4,5,6,7,8,8-hexachloro-la,4,7,7a-tetra- hudro-d 7-methemo-la-id-a-	

A - No positive identification
K - None detected
* - Values reported are blank corrected

Table CS-SP-II. Tentative Identification of Nontarget Compounds. Page 16 of 35.

11.5-12.5 Syy	Borehole	Depth	Unknown	Concentration	Sample			Common
11.5-12.5 597 20	Number	(ft)	Number	(bbm)	Number	25	Identification	COMME
11.5-12.5 619 910 9102 CAD	20100	11.5-12.5	597	20	002	CAD	1,2,3,4,5,7,7-heptachlorobicyclo(2.2.1)-	
601 100 002 CAD Digitolization-Sense 1-3-47-7-etera- 604 90 002 CAD Digitolization-3-47-7-etera- 606 50 002 CAD Digitolization-3-47-7-etera- 606 50 002 CAD Digitolization-3-47-7-etera- 606 50 002 CAD Digitolization-3-47-7-etera- 607 20 002 CAD Digitolization-3-47-7-etera- 608 7 002 CAD Digitolization-3-4-7-etera- 611 20 002 CAD Digitolization-3-4-6-fleathon- 612 4 002 CAD Digitolization-3-4-6-fleathon- 613 20 002 CAD Digitolization-3-6-fleathon- 614 4 002 CAD Digitolization-3-6-fleathon- 615 6 002 CAD Digitolization-3-6-fleathon- 616 6 002 CAD Digitolization-3-6-fleathon- 617 002 CAD Digitolization-3-6-fleathon- 618 6 002 CAD Digitolization-3-6-fleathon- 618 6 002 CAD Digitolization-3-6-fleathon- 628 6 002 CAD Digitolization-3-6-fleathon- 629 002 CAD Digitolization-3-6-fleathon- 629 003 CAP Digitolization-3-6-fleathon- 620 CAD Digitolization-3-6-fleathon-6-f							hept-2-ene	
601 100 002 CAD 4,5,6,78,8-benarolloc-3a,4,7,7-actera- 604 90 002 CAD 1,13,6,78,8-benarolloc-3a,4,7,7-actera- 606 50 002 CAD 1,13,4,5,5a,6-benarolloc-3a,4,7,7-actera- 606 50 002 CAD 1,13,4,5,5a,6-benarollococtabydro-1,3,5- 608 7 002 CAD 1,13,4,5,5a,6-benarollococtabydro-1,3,5- 610 60 002 CAD 1,13,5a,6-benarollococtabydro-1,3,5- 611 8 002 CAD 1,13,5a,6-benarollococtabydro-1,3,5- 612 4 002 CAD 1,13,5a,6-benarollococtabydro-1,3,5- 613 4 002 CAD 1,13,5a,6-benarollococtabydro-1,3,5- 614 7 002 CAD 1,13,5a,6-benarollococtabydro-1,3,5- 615 6 002 CAD 1,13,5a,6-benarollococtabydro-1,3,5- 616 7 002 CAD 1,13,5a,6-benarollococtabydro-1,3,5- 617 002 CAD 1,13,5a,6-benarollococtabydro-1,3,5- 618 7 002 CAD 1,13,4a,6-benarollococtabydro-1,3,5- 618 6 002 CAD 1,13,4a,6-benarollococtabydro-1,3,5- 618 6 002 CAD 1,13,4a,6-benarollococtabydro-1,3-butadiene 1,13,13,13,4a,6-benarollococtabydro-1,3- 618 7 005 CAP 1,11,2,1,4a,6-benarolloco-1,3-butadiene 1,11,2,13,4a,6-benarolloco-1,3-butadiene			599	30	002	8	bicyclo(2,2,2)oct=5-ene-2,5-urcarbonetrile	
hydrocate of the control of the co			6	901	002	CAD	4,5,6,7,8,8-hexachloro-3a,4,7,7a-tetra-	
604 90 002 CAD bicyclo(2.2.2)oct-5-ene-2.3-dicarbon- triis 607 50 002 CAD bicyclo(2.2.2)oct-5-ene-2.3-dicarbon- triis 607 50 002 CAD bicyclo(2.2.2)oct-5-ene-2.3-dicarbon- triis 608 7 002 CAD bydrocarbon with 6 chlorines 611 20 002 CAD bydrocarbon with 6 chlorines 612 4 002 CAD bydrocarbon with 6 chlorines 613 4 002 CAD bydrocarbon with 6 chlorines 614 7 002 CAD bydrocarbon with 6 chlorines 615 6 002 CAD bydrocarbon with 6 chlorines 616 6 002 CAD bydrocarbon with 6 chlorines 617 002 CAD bydrocarbon with 6 chlorines 618 6 002 CAD bydrocarbon with 6 chlorines 619 6 002 CAD bydrocarbon with 6 chlorines 619 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 628 6 002 CAD bydrocarbon with 6 chlorines 629 6 002 CAD bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarbon with 6 chlorines 629 6 003 CAP bydrocarb			100	8	}		hydro-4,7-methano-IH-indene	
606 50 002 CAD bicycloi2.2.3cct-5-ene-2.3-dicarbon-trille 607 20 002 CAD bicycloi2.2.3cct-5-ene-2.3-dicarbon-trille 608 7 002 CAD pydrocarbon with 6 chlorines 610 62 002 CAD hydrocarbon with 6 chlorines 611 40 002 CAD hydrocarbon with 6 chlorines 612 4 002 CAD hydrocarbon with 6 chlorines 613 4 0 002 CAD hydrocarbon with 6 chlorines 614 7 002 CAD hydrocarbon with 6 chlorines 615 6 002 CAD hydrocarbon with 6 chlorines 616 6 002 CAD hydrocarbon with 6 chlorines 617 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 619 002 CAD hydrocarbon with 6 chlorines 619 002 CAD hydrocarbon with 6 chlorines 620 CAD hydrocarb			*09	06	002	CAD	bicyclo(2,2,2)oct-5-ene-2,3-dicarbon-	
### ### ##############################			707	ş	000	CAD	bicyclo(2,2,2)oct-5-ene-2,3-dicarbon-	
607 20 002 CAD methano-18-cyclopropadialpreactands of 608 7 002 CAD methano-18-cyclopropadialpreactands of 610 610 610 002 CAD hydrocarbon with 6 chlorines 611 20 002 CAD hydrocarbon with 6 chlorines 612 4 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 618 618 618 618 618 618 618 618 618 618				3	1		trile	
608 7 002 CAD hydrocarbon with 6 chlorines 610 CAD hydrocarbon with 7 chlorines 611 20 002 CAD hydrocarbon with 7 chlorines 614 7 002 CAD hydrocarbon with 6 chlorines 618 6 002 CAD hydrocarbon with 6 chlorines 628 40 002 CAD hydrocarbon with 6 chlorines 628 6 002 CAD hydrocarbon with 6 chlorines 7 002 CAD hydrocarbon with 6 chlorines 628 6 002 CAD hydrocarbon with 6 chlorines 628 6 002 CAD hydrocarbon with 6 chlorines 7 005 CAP hydrocarbon with 6 chlorines 7 111.5-12.5 609 005 CAP hydrocarbon with 6 chlorines 7 164 2 005 CAP hydrocarbon with 6 chlorines 7 164 2 005 CAP hydrocarbon with 6 chlorines 7 164 2 005 CAP hydrocarbon with 6 chlorines 7 164 2 005 CAP hydrocarbon with 6 chlorines 7 164 2 005 CAP hydrocarbon with 6 chlorines 7 164 2 005 CAP hydrocarbon with 6 chlorines 7 164 2 005 CAP hydrocarbon with 6 chlorines 7 164 2 007 CAP hydrocarbon with 6 chlorines 7 164 2 007 CAP hydrocarbon with 6 chlorines 7 164 2 007 CAP hydrocarbon acid 4 dioctyl ester 605 CAB hydrocarbon acid 4 dioctyl ester 605 CAB hydrocarbon alcohol or alkene GT C-18 005 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon alcohol or alkene GT C-18 007 CAB hydrocarbon with 6 chlorines 1007 CAB hydrocarbon with 6 chlorines 1007 CAB hydrocarbon with 6 chlorines 1007 CAB hyd			607	20	002	CAD	1,1a,4,5,5a,6-hexachlorooctahydro-1,3,5- methano-1H-cyclopropa(A)pentalene	
11.5-12.5			803	•	002	CAD		<
11.5-12.5				. 00	005	CAD	9	
11.5-12.5				20	007	CAD	_	
11.5-12.5			113	} <	007	CAD	9	
11.5-12.5					002	CAD	hydrocarbon with 6 chlorines	
11.5-12.5			# T 9	. 10	005	CAD	hydrocarbon with 6 chlorines	
11.5-12.5 083 4 005 CAP unknown with 3 chlorines 143 9 005 CAP dichloroethyl ether 164 2 005 CAP dichloroethyl ether 164 2 005 CAP pentachloro-1,3-butadiene 003 CAP 1,1,2,3,4,4-hexachloro-1,-3-butadiene 003 CAB CAP 1,1,2,3,4,4-hexachloro-1,-3-butadiene 003 CAL hexadecanoic acid 005 CAB hexadecanoic acid 005 CAB hexadecanoic acid 005 CAB 006 CAB 006 CAB 006 CAB 007 C			963	· ve	005	CAD	metabolite or isomer of isodrin	
11.5-12.5			628	, 2	002	CAD	metabolite or isomer of aldrin	
11.5-12.5 143 9 005 CAP dichloroethyl ether 164 2 005 CAP pentachloro-1,3-butadiene 186 3 005 CAP 1,1,2,3,4,4-bexachloro-1,-3-butadiene 186 3 005 CAP 1,1,2,3,4,4-bexachloro-1,-3-butadiene 18.5-16.5 609 0.5 007 CAD hexadecanoic acid 15.5-16.5 630 0.6 008 CAD hexadecanoic acid dioctyl ester 18.5-16.5 630 0.6 009 CAD nonanedioic acid, dibutyl ester 18.5-16.5 615 0.6 009 CAD unknown alcohol or alkene GT C-18 18.5-16.5 615 0.6 009 CAD unknown alcohol or alkene GT C-18 18.5-16.5 615 0.6 009 CAD Unknown alcohol or alkene GT C-18 18.5-16.5 615 0.6 009 CAD Unknown alcohol or alkene GT C-18 18.5-16.5 615 0.6 009 CAD Unknown alcohol or alkene GT C-18 18.5-16.5 615 0.6 009 CAD Unknown alcohol or alkene GT C-18 18.5-16.5 615 0.6 009 CAD Unknown alcohol or alkene GT C-18 18.5-16.5 615 0.6 009 CAD Unknown alcohol or alkene GT C-18 18.5-16.5 615 0.6 009 CAD Unknown alcohol or alkene GT C-18 18.5-16.5 615 0.6 009 CAD Unknown alcohol or alkene GT C-18 18.5-16.5 615 0.6 009 CAD Unknown alcohol or alkene GT C-18 18.5-16.5 615 0.6 0.				•	500	CAP	unknown with 3 chlorines	
11.5-12.5 619 0.5 0.05 0.7 0.05 0.7 0.05 0.7 0.05 0.7	C80305	11.5-12.5	590	• (2	940	Airtorosthyl ether	
11.5-12.5 11.5-12.5 609 0.5 003 CAL bexadecanoic acid 003 CAL bexadecanoic acid 15.5-16.5 619 0.6 004 CAL bexadecanoic acid dioctyl ester 20.5-21.5 615 0.6 009 CAL bexadecanoic acid dioctyl ester 004 CAL bexadecanoic acid dioctyl ester 005 CAL bexadecanoic acid dioctyl ester 006 CAL bexadecanoic acid dioctyl ester 007 CAL cal 008 CAL bexadecanoic acid dioctyl ester 009 CAL cal 009 CAL cal cal cal cal cal cal cal ca			143	55	603	֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	serves of the se	
11.5-12.5 609 0.5 CAP 1,1,2,3,4,4-hexachloro-1,-3-butadiene 11.5-12.5 609 0.5 007 CAD hexadecanoic acid dioctyl ester 003 CAL hexadecanoic acid, dioctyl ester 00.5 0.6 009 CAD nonamedioic acid, dibutyl ester 00.5 0.6 009 CAD unknown alcohol or alkene GT C-18 0.5 0.6 009 CAD unknown alcohol or alkene GT C-18 0.5 0.6 0.09 CAD cab			164	7	902	Y		
11.5-12.5 609 0.5 007 CAL hexadecanoic acid 15.5-16.5 630 0.6 008 CAL hexadecanoic acid 20.5-21.5 615 0.6 009 CAD nonamedioic acid, dibutyl ester 637 0.4 009 CAD unknown alcohol or alkene GT C-18 25.5-26.5			186	M	900	CAP	1,1,2,3,4,4-hexachloro-1,-3-buradiene	
11.5-12.5 609 0.5 007 CAL hexadecanoic acid 15.5-16.5 630 0.6 008 CAL hexadecanoic acid dioctyl ester 20.5-21.5 615 0.6 009 CAD nonamedioic acid, dibutyl ester 637 0.4 009 CAD unknown alcohol or alkene GT C-18 25.5-26.5					003	CAD		4
15.5-16.5 609 0.5 007 CAD hexadecanoic acid 15.5-16.5 630 0.6 008 CAD hexadecanoic acid, dioctyl ester 20.5-21.5 615 0.6 009 CAD nonsmedioic acid, dibutyl ester 637 0.4 009 CAD unknown alcohol or alkene GT C-18					005	CAL		× (
630 0.6 008 CAD hexadecanoic acid, dioctyl ester 004 CAL 009 CAD nonanedioic acid, dibutyl ester 615 0.6 009 CAD unknown alcohol or alkene GT C-18 637 0.4 009 CAD unknown alcohol or alkene GT C-18	CSUSO	11.5-14.9	609	0.5	000	CAD	hexadecanoic acid	a
630 0.6 008 CAD hexadecanoic acid, dioctyl ester 615 0.6 009 CAD nonamedioic acid, dibutyl ester 617 0.4 009 CAD unknown alcohol or alkene GT C-18 637 0.4 005 CAL		•			100	CAL		₩.
615 0.6 009 CAD nonanedioic acid, dibutyl ester 615 0.6 009 CAD unknown alcohol or alkene GT C-18 637 0.4 005 CAL		15.5-16.5	630	9.0	800	CAD	hexadecanoic acid, dioctyl ester	a
615 0.6 009 CAD nonanedicic acid, dibutyl ester 637 0.4 009 CAD unknown alcohol or aikene GT C-18 637 0.4 005 CAL					700	Į.		×
615 0.6 009 CAD nonaneurous alkene GT C-18 637 0.4 009 CAD unknown alcohol or alkene GT C-18		20.5-21.5			F (3 6	acid. dibutyl ester	a
637 0.4 009 CAL URKHUWH GLOGICA CLEANING CALL			615	9.0	600	2 5	nonamedicity action than (F) C-18	a
005 CAL			637	0.4	600	gy.		
CATO CITY		1			400	382		×
070		25.5-26.5			010	CAD		¥

A - No positive identification
D - Derived from natural products
GT - Greater than
K - None detected
- - Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Montarget Compounds. Page 17 of 35.

Borehole Mumber	Depth (ft)	Unknown Number	Concentration (ppm)*	Sample Number	Lot	Best-fit Identification	Comments
CS0307	11.5-12.5			900	CAB		=
		605	0.3	900	CAC	butyl 2-ethylhexyl phthalate	1 '0
		630	~	900	CAC	hexanedioic acid, mono(2-ethylhexyl)	
			,	,	;	ester	<u>د</u> ن
		635	0.3	900	S C	alkene, C-18	N3
	15.5-16.5			007	CAR		×
		635	9.0	007	CAC	alkene, C-18	M
	20.5-21.5		•	900	CAP		M
		615	7	*00	CA _D	nonanedioic acid, dibutyl ester	. 🕰
	25.5-26.5			007	S.		×
		615	7	900	CAD	nonanedioic acid, dibutyl ester	۵
		630	₽.0	900	C P D	hexanedioic acid, dioctyl ester	6 , 6
CS0308	10.8	083	74	900	CAP	unknown with 3 chlorines	
		095	-	800	CAF		<
		630	0.4	900	CAD	hexanedioic acid, dioctyl ester	a '
MKE021	5.9-6.8	526	e	003	BQX	branched hydrocarbon, C-7	
		529	•	005	BQX	ethylmethyl benzene	
		531	70	002	BQX	dibromochloropropane	
		531	20	007	BOX		<
		535	40	005	BQX	trimethyl benzene	
		539	09	002	BOX	branched hydrocarbon, C-9	
		540	ស	005	BOX	cyclic hydrocarbon, C-9	
		541	09	007	BOX	branched hydrocarbon, C-9	
		543	6	002	BOX	cyclic hydrocarbon, C-9	,
		544	•	005	X Of		<
		544	9	007	¥0a		
		545	•	007	X O G	branched hydrocarbon, C-9	
		547	70	005	¥0g		⋖
		549	2000	002	¥08	halogenated hydrocarbon	
		550	10	005	XÕ8		<
		550	•	005	BOX		<
		551	30	005	XQ8	diethylmethyl benzene	
		66.1	50	007	NO.		<

A - No positive identification
C - Plasticiser
D - Derived from natural products
E - Suspected laboratory contaminant
P - Low concentration
R - None detected
• - Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 18 of 35.

Borehole	Interval Depth	Unknown	Concentration	Sample		Best-fit	
Mumber	(££)	Number	(mdd)	Number	ž	Identification	Comments
MK 8021	5.9-6.8	552	20	005	BOX	branched hydrocarbon, C-10	
		552	0.00	007	BOX	cyclic hydrocarbon, C-10	
		553	6	005	XÕ8	alkylated benzene	
		554	20	005	BOX	alkylated benzene	
		555	•	007	BOX	branched hydrocarbon, C-11	
		555	20	007	BOX		
		556	'n	005	90x	alkylated benzene	
		557	10	005	BOX	polyaromatic hydrocarbon	
		559	40	005	BOX	branched hydrocarbon, C-11	
		. 560	30	002	ВОХ	1,1,2,3,4,4-hexachloro-1,3-butadiene	
		563	'n	005	BOX		<
		565	- 6 0	005	BOX		<
		569	•	007	BOX		<
		269	m	002	BOX	dichloro-chloroethenyl-benzene	
		571	10	005	BQX		<
		574	10	005	BOX		<
		575	7	005	BOX		
		576	•	005	ВОХ		
		578	&	005	BOX	dimethyl naphthelene	
		582	10	007	BOX		<
		585	00	005	¥0		<
		585	30	005	BOX	pentachloroethane	
		587	ø	005	BOX		⋖
		591	10	002	BOX	octachlorocyclopentene	
		593	1	005	BQX		<
		593	4	007	BOX	unknown chlorinated benzene	
		595	30	007	80x		<
		599	70	007	¥Õ		<
		601	•	005	X Od		<
		601	10	002	Š	chlordene	
		603	σ '	005	BOX		< ∙
		7	08	005	XÖ		<
		605	20	007	BOX		< ∙
		909	10	005	X.		<
		909	20	007	BQX		⋖ :
		209	100	200	BQX		<
		209	1000	005	BQX		<
		809	vo	005	X O		<
		609	100	005	BQ.X		<
		610	200	200	BOX		<
		615	20	005	BQX	1-chloro-4-(2,2-dichloro-1-	
						phenylethyl) benzene	

A - No positive identification* - Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 19 of 35.

Borehole	Depth	Unknown	Concentration	Sample		Best-fit	
Mumber	-	Number	*(mgg)	Number	Lot	Identification	Comments
MKE021	5.9-6.8	616	vo	002	XO8	Crotoxyphos	
		619	70	007	BOX.	tetrachlorvinohos	
		620	70	005	BOX		<
		622	•	003	B OX	m,p'-DDD isomer	
		625	30	002	BOX	m,p'-DDD isomer	
		627	6	007	BOX	•	<
		631	S	003	BOX		<
		632	•	005	BOX	niralin	
		633	-	002	BOX		4
		635	•	002	NO8		<
		636	10	005	BOX		<
		636	9	005	BOX		<
		637	20	005	BOX		<
		638	9	005	BOX		: <
		640	20	005) N		<
		641	100	005	BOX		<
		643	•	002	BOX	branched hydrocarbon, C-26	
		646	•	002	BOX		
		650	5	002	¥Ö R		
MKE022	5.7-6.5	541	-	003	BOX		<
		543	-	003	¥Õ	trimethylbenzene	
		244	a	003	XO BO		<
		545	₽.0	003	¥08	hexachloroethane	
		551	7	003	BOX	branched hydrocarbon, C-11	
		553	0.5	003	BOX		<
		260	9.0	003	¥0		<
		561		003	XÕ g	1, 1, 2, 3, 4, 4-hexachloro-1, 3-butadiene	
		268	0.5	003	BOX	branched hydrocarbon, C-12	
		575	0.7	003	ò		<
		576	0.7	003	BOX		<
		577	0.7	003	¥04		<
		577	₽.0	003	BOX	dimethyl naphthelene	
		. 283	0.7	003	BOX	1-chloro-3-trichlorethenyl benzene	
		585	4.0	903	BOX		<
		588	10	003	BOX		<
		589	0.0	003	X Og	unknown chlorinated hydrocarbon	
		591	9.0	003	¥Õ q	octachloro cyclopentene	
		593	-	003	BOX		<
		594	9.0	003	BOX	1,4-dichloro-2-(2-chloroethy1)-benzene	

A - No positive identification- Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 20 of 35.

Minister Day		Interval						
5.7-6.5 603 0.4 003 BOX 607 80 03 BOX 619 10 03 BOX 610 10 03 BOX 611 10 03 BOX 612 0.6 003 BOX 613 0.7 003 BOX 621 0.4 003 BOX DDE isoser 622 0.4 003 BOX DDE isoser 623 0.4 003 BOX DDE isoser 624 0.6 003 BOX DDE isoser 625 0.6 003 BOX DDE isoser 626 0.6 003 BOX DDE isoser 627 0.6 003 BOX DDE isoser 63 0.6 003 BOX DDE isoser 63 0.6 003 BOX DDE isoser 640 0.6 003 BOX DDI isoser <th>Borehole Number</th> <th>Depth (ft)</th> <th>Unknown</th> <th>Concentration (ppm)*</th> <th>Sample Number</th> <th>Lot</th> <th>Best-fit Identification</th> <th>Comments</th>	Borehole Number	Depth (ft)	Unknown	Concentration (ppm)*	Sample Number	Lot	Best-fit Identification	Comments
665 667 669 603 803 667 669 70 603 803 668 619 70 603 803 619 620 70 803 803 619 620 803 803 619 620 803 803 621 0.4 003 803 622 0.4 003 803 623 0.4 003 803 624 0.4 003 803 625 0.8 003 803 626 0.8 003 803 627 0.6 003 803 628 0.6 003 803 629 0.1 003 803 621 0.4 003 622 0.0 003 803 623 0.4 003 624 0.4 003 625 0.1 003 803 626 0.1 003 803 627 0.1 0 003 803 628 0.1 0 003 803 628 0.1 0 003 803 638 0.1 0 003 803 640 0.2 0 003 803 651 0.4 003 652 0.3 003 803 653 0.4 003 653 0.4 003 654 0.4 003 655 0.1 003 803 655 0.1 003 803 657 0.1 0 013 803 658 0.1 0 003 803 658 0.1 0 003 803 658 0.1 0 003 803 658 0.1 0 003 803 658 0.1 0 003 803 658 0.1 0 003 803 658 0.1 0 003 803 658 0.1 0 003 803 658 0.1 0 003 803 658 0.1 0 003 803 658 0.1 0 004 803 658 0.1 0 0	MK R022	5.7-6.5	603	••0	003	BOX		4
607 80 803 803 804 615 616 616 617 80 803 803 803 803 803 803 803 803 803			909	·	003	BOX		: «
6109 17 003 B0X tetrachlorvinghous 619 17 003 B0X tetrachlorvinghous 619 0.4 003 B0X tetrachlorvinghous 619 0.4 003 B0X box tetrachlorvinghous 621 0.4 003 B0X box box isoner 622 0.4 003 B0X box box isoner 623 0.4 003 B0X box box isoner 624 0.4 003 B0X box isoner 625 0.4 003 B0X box chlorinated unknown 628 0.4 003 B0X chlorinated unknown 638 0.4 003 B0X chlorinated unknown 638 0.5 003 B0X chlorinated unknown 639 0.4 003 B0X chlorinated unknown 630 0.5 003 B0X chlorinated unknown 630 0.5 003 B0X chlorinated unknown 630 0.5 003 B0X chlorinated unknown 630 0.5 003 B0X chlorinated unknown 630 0.5 003 B0X chlorinated unknown 640 0.5 003 B0X chlorinated unknown 641 0.5 003 B0X chlorinated unknown 641 0.5 003 B0X chlorinated unknown 641 0.5 003 B0X chlorinated unknown 641 0.5 003 B0X chlorinated unknown 641 0.5 003 B0X chlorinated unknown 641 0.5 003 B0X chlorinated unknown 641 0.5 003 B0X chlorinated unknown 641 0.5 003 B0X chlorinated unknown 641 0.5 003 B0X chlorinated unknown 641 0.5 003 B0X chlorinated unknown 642 0.5 003 B0X chlorinated unknown 643 0.5 003 B0X chlorinated unknown 643 0.5 003 B0X chlorinated unknown 643 0.5 003 B0X chlorinated unknown 643 0.5 003 B0X chlorinated unknown 643 0.5 003 B0X chlorinated unknown 643 0.5 003 B0X chlorinated unknown 644 0.5 003 B0X			607	80	003	BOX		<
\$10 0.03 BQX \$15 0.6 0.03 BQX \$15 0.7 0.03 BQX \$17 0.4 0.03 BQX \$21 0.4 0.03 BQX \$22 0.4 0.03 BQX \$23 0.4 0.03 BQX \$24 0.6 0.03 BQX \$25 0.6 0.04 BQX \$25 0.6 0.6 DQX \$25 0.6 0.			609	7	003	BQX		<
615 0.9 003 BOX tetrachlorvinghos 616 0.5 003 BOX tetrachlorvinghos 619 0.4 003 BOX DDE isomer 621 0.4 003 BOX DDE isomer 622 0.4 003 BOX DDE isomer 626 0.2 003 BOX DDI classed unknown 627 0.5 003 BOX Chlorinated unknown 634 0.4 003 BOX Chlorinated unknown 635 0.5 003 BOX Chlorinated unknown 636 0.5 003 BOX Chlorinated unknown 637 1 003 BOX Chlorinated unknown 640 2 003 BOX Chlorinated unknown 641 3 003 BOX Chlorinated unknown 643 2 003 BOX Chlorinated unknown 644 3 003 BOX Chlorinated unknown<			610	10	003	BOX		<
616 0.5 003 BQX tetrachlorvinphos 621 0.4 003 BQX DDE isomer 621 0.4 003 BQX DDE isomer 622 0.4 003 BQX DDD isomer 626 2 0.03 BQX DDD isomer 627 0.03 BQX DDD isomer 628 0.5 0.03 BQX Chlorinated unknown 638 0.6 0.03 BQX Chlorinated unknown 639 0.7 0.03 BQX Chlorinated unknown 631 0.7 0.03 BQX Chlorinated unknown 631 0.4 0.03 BQX Chlorinated unknown 635 0.5 0.03 BQX Chlorinated unknown 636 0.5 0.03 BQX Chlorinated unknown 631 0.5 0.03 BQX Chlorinated unknown 631 1 0.03 BQX Chlorinated unknown <			615	6.0	003	BOX		<
619 2 003 BOX tetrachlorviphos 621 0.4 003 BOX box boxes 622 0.4 003 BOX DDE isomer 622 0.8 0.8 0.03 BOX DDE isomer 626 0.8 0.8 0.03 BOX DDE isomer 626 0.8 0.9 0.03 BOX DDE isomer 628 0.6 0.03 BOX DDE isomer 628 0.6 0.03 BOX Chlorinated unknown 628 0.4 0.03 BOX Chlorinated unknown 634 0.4 0.03 BOX Chlorinated unknown 635 0.5 0.03 BOX Chlorinated unknown 636 0.5 0.03 BOX Chlorinated unknown 637 0.5 0.03 BOX Chlorinated unknown 637 0.5 0.03 BOX Chlorinated unknown 638 0.5 0.03 BOX Chlorinated unknown 640 0.5 0.03 BOX Chlorinated unknown 640 0.5 0.03 BOX Chlorinated unknown 641 0.5 0.03 BOX Chlorinated unknown 641 0.5 0.03 BOX Chlorinated unknown 641 0.5 0.03 BOX Chlorinated unknown 641 0.5 0.03 BOX Chlorinated unknown 641 0.5 0.03 BOX Chlorinated unknown 641 0.5 0.03 BOX Chlorinated unknown 641 0.5 0.03 BOX Chlorinated unknown 641 0.5 0.03 BOX Chlorinated unknown 641 0.5 0.03 BOX Chlorinated unknown 641 0.5 0.03 BOX Chlorinated unknown 641 0.5 0.03 BOX Chlorinated unknown 641 0.5 0.03 BOX Chlorinated unknown 641 0.03 BOX Chlorinated unknown 641 0.03 BOX Chlorinated Unknown 641 0.04 BOX Chlorinated Unknown 6			616	0.5	003	ВОХ		<
621 0.4 003 BQX DDE isomer 622 0.4 003 BQX DDE isomer 622 0.4 003 BQX DDD isomer 622 0.8 003 BQX DDD isomer 622 0.8 003 BQX DDD isomer 623 0.5 003 BQX DDD isomer 634 0.4 003 BQX Chlorinated unknown 634 0.4 003 BQX Chlorinated unknown 635 0.4 003 BQX Chlorinated unknown 636 0.5 003 BQX Chlorinated unknown 637 1 003 BQX Chlorinated unknown 637 1 003 BQX Chlorinated unknown 638 2 003 BQX Chlorinated unknown 639 2 003 BQX Chlorinated unknown 630 0.5 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 641 641 BQX Chlorinated Unknown C-8 BQX Chlorinated Unknown 641 641 BQX Chlorinated Unknown 641 641 BQX Chlorinated Unknown 641 641 BQX Chlorinated Unknown 641 641 BQX Chlorinated Denzene 641 641 BQX Chlorinated Denzene			619	7	003	BOX	tetrachlorvinphos	
621 0.4 003 BOX DDE isomer 626 0.8 0.03 BOX DDD isomer 626 0.8 0.03 BOX DDD isomer 627 0.5 0.03 BOX DDT isomer 628 0.6 0.03 BOX DDT isomer 634 0.4 0.03 BOX Chlorinated unknown 635 0.4 0.03 BOX Chlorinated unknown 636 0.5 0.03 BOX Chlorinated unknown 637 0.5 0.03 BOX Chlorinated unknown 638 2 0.03 BOX Chlorinated unknown 640 2 0.03 BOX Chlorinated unknown 641 2 0.03 BOX Chlorinated unknown 641 3 0.03 BOX Chlorinated unknown 641 3 0.03 BOX Chlorinated unknown 642 0.03 BOX Chlorinated unknown 643 10 0.04 BOX Chlorinated unknown 640 2 0.03 BOX Chlorinated unknown 641 3 0.04 BOX Chlorinated unknown 642 0.03 BOX Chlorinated unknown 643 10 0.04 BOX Chlorinated unknown 644 0.04 BOX Chlorinated unknown 645 0.04 BOX Chlorinated Unknown 646 0.04 BOX Chlorinated Unknown 647 0.004 BOX Chlorinated Unknown 648 0.004 BOX Chlorinated Unknown 649 0.004 BOX Chlorinated Unknown 640 CLB BOX CHLORINATED 640 0.004 BOX CHLORINATED 640 0.0			621	₽.0	003	BOX		<
622 0.4 003 BQX DDD isomer 626 0.8 003 BQX DDD isomer 626 2 003 BQX DDT isomer 627 0.5 003 BQX Chlorinated unknown 638 0.4 003 BQX Chlorinated unknown 635 0.5 003 BQX Chlorinated unknown 636 2 003 BQX Chlorinated unknown 637 1 003 BQX Chlorinated unknown 638 2 003 BQX Chlorinated unknown 640 2 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 640 2 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 640 2 003 BQX Chlorinated unknown 641 3 0 003 BQX Chlorin			621	4.0	003	ВОХ	DDE isomer	
626 0.8 003 BQX DDD isomer 627 0.5 003 BQX Chlorinated unknown 628 0.6 003 BQX Chlorinated unknown 628 0.6 003 BQX Chlorinated unknown 634 0.4 003 BQX Chlorinated unknown 635 0.4 003 BQX Chlorinated unknown 636 0.5 003 BQX Chlorinated unknown 637 1 003 BQX Chlorinated unknown 640 2 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown 651 4 004 BQX Chlorinated unknown 652 003 BQX Chlorinated unknown 641 3 003 BQX Chlorinated unknown <td></td> <td></td> <td>622</td> <td>•••</td> <td>003</td> <td>80×</td> <td>DDD isomer</td> <td></td>			622	•••	003	80×	DDD isomer	
626 2 003 BQX chlorinated unknown 628 0.6 0.03 BQX chlorinated unknown 634 0.4 0.04 0.03 BQX chlorinated unknown 634 0.4 0.03 BQX chlorinated unknown 635 0.4 0.03 BQX chlorinated unknown 636 0.5 0.03 BQX chlorinated unknown 636 2 0.03 BQX chlorinated unknown 637 1 0.03 BQX chlorinated unknown 638 2 0.03 BQX chlorinated unknown 630 2 0.03 BQX chlorinated unknown 641 3 0.03 BQX chlorinated unknown 641 3 0.03 BQX chlorinated unknown 641 3 0.03 BQX chlorinated unknown 641 3 0.03 BQX chlorinated unknown 641 3 0.03 BQX chlorinated unknown 641 3 0.03 BQX chlorinated unknown 641 3 0.04 BQX chlorinated unknown 641 3 0.04 BQX chlorinated unknown 641 641 641 641 641 641 641 641 641 641			626	8.0	003	BOX	DDD isomer	
627 0.5 003 BQX chlorinated unknown 628 0.6 0.03 BQX chlorinated unknown 634 0.4 0.03 BQX chlorinated unknown 635 0.5 0.03 BQX chlorinated unknown 636 0.5 0.03 BQX chlorinated unknown 638 2 0.03 BQX chlorinated unknown 640 2 0.03 BQX chlorinated unknown 641 3 0.03 BQX chlorinated unknown 550 10 0.04 BQX chlorinated unknown 532 5 0.03 BQX chlorinated unknown 532 10 0.04 BQX<			626	7	003	BOX	DDT isomer	
628 0.6 003 BOX Chlorinated unknown 634 0.4 003 BOX polssibly endrin ketone 634 0.4 003 BOX polssibly endrin ketone 635 0.4 003 BOX chlorinated unknown 636 2 003 BOX chlorinated unknown 637 1 003 BOX chlorinated unknown 640 2 003 BOX chlorinated unknown 641 3 003 BOX chlorinated unknown 536 40 004 BOX chlorinated unknown 537 40 004 BOX chlorinated unknown 538 40 004 BOX			627	0.5	003	BOX	chlorinated unknown	
634 0.4 003 BQX possibly endrin ketone 635 0.4 003 BQX polycyclic hydrocarbon 636 0.5 003 BQX chlorinated unknown 637 1 003 BQX chlorinated unknown 638 2 003 BQX chlorinated unknown 639 2 003 BQX chlorinated unknown 640 2 003 BQX chlorinated unknown 641 3 003 BQX chlorinated unknown 641 3 003 BQX chlorinated unknown 641 3 003 BQX chlorinated unknown 530 10 003 BQX chlorinated unknown 531 4 004 BQX chlorinated unknown 532 40 004 BQX chlorinated unknown 533 40 004 BQX chlorinated unknown 534 40 004 BQX			628	9.0	003	¥08	chlorinated unknown	
634 0.4 003 BOX polycyclic hydrocarbon 635 0.5 003 BOX chlorinated unknown 636 2 003 BOX chlorinated unknown 637 1 003 BOX chlorinated unknown 640 2 003 BOX chlorinated unknown 641 3 003 BOX chlorinated unknown 641 3 003 BOX chlorinated unknown 641 3 003 BOX chlorinated unknown 641 3 003 BOX chlorinated unknown 641 3 003 BOX chlorinated unknown 641 3 004 BOX chlorinated unknown 641 3 004 BOX chlorinated unknown 641 822 40 004 BOX chlorinated unknown 642 832 80 004 BOX chlorinated unknown 643 823 824 80 004 BOX chlorinated benzene 642 834 80 004 BOX chlorinated hydrocarbon, C-9 834 80 004 BOX chlorinated hydrocarbon, C-9 834 80 004 BOX chlorinated hydrocarbon, C-9 835 841 10 004 BOX branched hydrocarbon, C-9 835 842 84 10 004 BOX branched hydrocarbon, C-9 835 843 80 004 BOX branched hydrocarbon, C-9 835 844 10 004 BOX branched hydrocarbon, C-9 835 845 850 804 BOX branched hydrocarbon, C-9 835 845 850 804 BOX branched hydrocarbon, C-9 835 845 850 804 BOX branched hydrocarbon, C-9 835 845 850 845 804 BOX branched hydrocarbon, C-9 835 845 845 845 845 845 845 845 845 845 84			634	0.4	003	BQX	possibly endrin ketone	
635 0.4 003 BQX chlorinated unknown 636 2 003 BQX chlorinated unknown 637 1 003 BQX chlorinated unknown 638 2 003 BQX chlorinated unknown 640 2 003 BQX chlorinated unknown 641 3 003 BQX chlorinated unknown 641 4 004 BQX chlorinated unknown 652 004 BQX chlorinated unknown 653 4 004 BQX chlorinated unknown 653 4 004 BQX chlorinated unknown			634	₹.0	903	BOX	polycyclic hydrocarbon	
636 0.5 003 BCX chlorinated unknown 636 2 003 BOX chlorinated unknown 638 2 003 BOX chlorinated unknown 640 2 003 BOX chlorinated unknown 641 2 003 BOX chlorinated unknown 640 2 003 BOX chlorinated unknown 641 3 003 BOX chlorinated unknown 641 3 003 BOX chlorinated unknown 641 3 004 BOX chlorinated unknown 530 10 004 BOX chlorinated unknown 531 4 004 BOX chlorinated unknown 532 40 004 BOX chlorinated unknown 532 40 004 BOX chlorinated unknown 532 40 004 BOX chlorinated unknown 533 40 004 BOX ch			635	₹.0	003	XŌ9	,	<
636 2 003 BOX chlorinated unknown 637 1 003 BOX chlorinated unknown 640 2 003 BOX chlorinated unknown 641 3 003 BOX chlorinated unknown 641 3 003 BOX chlorinated unknown 641 3 003 BOX chlorinated unknown 642 003 BOX chlorinated unknown 643 10 004 BOX chlorinated unknown 643 10 004 BOX chlorinated unknown 644 10 004 BOX chlorinated unknown 645 10 004 BOX chlorinated unknown 646 10 004 BOX chlorinated unknown 647 10 004 BOX chlorinated chydrocarbon, C-9 640 10 004 BOX chlorinated chydrocarbon, C-9 651 10 004 BOX branched hydrocarbon, C-9 652 6 004 BOX branched hydrocarbon, C-9 653 10 004 BOX branched hydrocarbon, C-9 654 10 004 BOX branched hydrocarbon, C-9 655 6 004 BOX branched hydrocarbon, C-9 656 10 004 BOX branched hydrocarbon, C-9 657 6 004 BOX branched hydrocarbon, C-9 658 10 004 BOX branched hydrocarbon, C-9 659 004 BOX branched bydrocarbon, C-9 650			636	0.5	003	BOX	chlorinated unknown	
637 1 003 BQX chlorinated unknown 648 2 003 BQX chlorinated unknown 641 2 003 BQX chlorinated unknown 641 3 003 BQX chlorinated unknown 5.8-6.8 527 4 004 BQX chlorinated unknown 530 10 004 BQX chlorinated unknown 531 10 004 BQX chlorinated unknown 532 10 004 BQX chlorinated unknown 533 10 004 BQX chlorinated unknown 534 10 004 BQX trimethyl benzene 536 70 004 BQX trimethyl benzene 536 70 004 BQX trimethyl benzene 536 70 004 BQX trimethyl benzene 541 4 004 BQX trimethyl benzene 542 4 004 BQX branched hydrocarbon, C-9 543 6 004 BQX			636	7	003	BOX		
638 2 003 BQX chlorinated unknown 640 2 003 BQX chlorinated unknown 641 3 003 BQX chlorinated unknown 641 3 004 BQX chlorinated unknown 536 10 004 BQX chlorinated unknown 532 40 004 BQX chlorinated unknown 534 40 004 BQX trimethyl benzene 536 70 004 BQX trimethyl benzene 538 8 004 BQX trimethyl benzene 540 50 004 BQX branched hydrocarbon, C-9 541 4 004 BQX branched hydrocarbon, C-9 545 6 004 BQX			637	-	003	BOX		
640 2 003 BQX chlorinated unknown 5.8-6.8 527 4 004 BQX chlorinated unknown 5.8-6.8 527 4 004 BQX chlorinated unknown 530 10 004 BQX alkylated benzene 532 40 004 BQX trimethyl benzene 534 10 004 BQX trimethyl benzene 536 10 004 BQX trimethyl benzene 536 70 004 BQX trimethyl benzene 538 8 004 BQX trimethyl benzene 539 8 004 BQX trimethyl benzene 540 50 004 BQX trimethyl benzene 541 4 004 BQX trimethyl benzene 542 4 004 BQX branched hydrocarbon, C-9 543 4 004 BQX branched hydrocarbon, C-9 545 6 0			638	7	003	BOX		
5.8-6.8 527 4 004 BOX chlorinated unknown 5.8-6.8 527 4 004 BOX branched hydrocarbon, C-8 530 10 004 BOX trimethyl benzene 532 40 004 BOX trimethyl benzene 534 10 004 BOX trimethyl benzene 536 70 004 BOX trimethyl benzene 538 8 004 BOX trimethyl benzene 540 50 004 BOX trimethyl benzene 541 4 004 BOX trimethyl benzene 542 4 004 BOX trimethyl benzene 543 4 004 BOX trimethyl benzene 544 10 004 BOX trimethyl benzene 545 6 004 BOX trimethyl benzene 546 10 004 BOX trimethed hydrocarbon, C-9 549 90 004 BOX branched hydrocarbon, C-9 549 90 004 <td></td> <td></td> <td>640</td> <td>7</td> <td>003</td> <td>BOX</td> <td></td> <td></td>			640	7	003	BOX		
5.8-6.8 527 4 004 BQX branched hydrocarbon, C-8 530 10 004 BQX alkylated benzene 532 50 004 BQX trimethyl benzene 532 40 004 BQX trimethyl benzene 534 10 004 BQX trimethyl benzene 536 70 004 BQX trimethyl benzene 538 8 004 BQX trimethyl benzene 540 50 004 BQX trimethyl benzene 541 4 004 BQX trimethyl benzene 542 4 004 BQX branched hydrocarbon, C-9 543 4 004 BQX branched hydrocarbon, C-9 545 6 004 BQX branched hydrocarbon, C-9 545 6 004 BQX branched hydrocarbon, C-9 549 90 004 BQX branched hydrocarbon, C-9 549 90 <t< td=""><td></td><td></td><td>641</td><td></td><td>003</td><td>×ď</td><td></td><td></td></t<>			641		003	×ď		
530 10 004 BQX alkylated benzene 532 50 004 BQX ethylmethyl benzene 532 40 004 BQX ethylmethyl benzene 534 10 004 BQX trimethyl benzene 536 70 004 BQX trimethyl benzene 538 8 004 BQX trimethyl benzene 540 50 004 BQX trimethyl benzene 541 4 004 BQX branched hydrocarbon, C-9 542 4 004 BQX branched hydrocarbon, C-9 544 10 004 BQX branched hydrocarbon, C-9 545 6 004 BQX branched hydrocarbon, C-9 546 10 004 BQX branched hydrocarbon, C-9 549 90 004 BQX unknown alkylated benzene 550 4 004 BQX unknown alkylated benzene	MKE023	5.8-6.8	527	•	90	BOX	branched hydrocarbon, C-8	
50 004 BQX ethylmethyl benzene 40 004 BQX trimethyl benzene 10 004 BQX trimethyl benzene 70 004 BQX trimethyl benzene 8 004 BQX trimethyl benzene 8 004 BQX branched hydrocarbon, C-9 4 004 BQX branched hydrocarbon, C-9 10 004 BQX branched hydrocarbon, C-9 10 004 BQX branched hydrocarbon, C-9 90 004 BQX branched hydrocarbon, C-9 90 004 BQX unknown alkylated benzene			530	10	₩00	XÖ4	alkylated benzene	
40 004 BQX trimethyl benzene 10 004 BQX trimethyl benzene 70 004 BQX trimethyl benzene 8 004 BQX trimethyl benzene 50 004 BQX branched hydrocarbon, C-9 4 004 BQX branched hydrocarbon, C-9 10 004 BQX branched hydrocarbon, C-9 10 004 BQX branched hydrocarbon, C-9 90 004 BQX branched hydrocarbon, C-10 90 004 BQX unknown alkylated benzene			532	50	004	BQX	ethylmethyl benzene	
10 004 BQX ethylmethyl benzene 70 004 BQX trimethyl benzene 8 004 BQX trimethyl benzene 50 004 BQX branched hydrocarbon, C-9 4 004 BQX branched hydrocarbon, C-9 10 004 BQX branched hydrocarbon, C-9 10 004 BQX hexachloro ethane 90 004 BQX branched hydrocarbon, C-10 90 004 BQX unknown alkylated benzene			532	\$	₹00	¥04	trimethyl benzene	
70 004 BQX trimethyl benzene 8 004 BQX branched hydrocarbon, C-9 4 004 BQX branched hydrocarbon, C-9 10 004 BQX branched hydrocarbon, C-9 6 004 BQX branched hydrocarbon, C-9 10 004 BQX hexachloro ethane 90 004 BQX branched hydrocarbon, C-10 4 004 BQX unknown alkylated benzene			534	10	004	BOX	ethylmethyl benzene	
8 004 BQX 50 004 BQX branched hydrocarbon, C-9 4 004 BQX branched hydrocarbon, C-9 10 004 BQX branched hydrocarbon, C-9 10 004 BQX branched hydrocarbon, C-9 10 004 BQX hexachloro ethane 90 004 BQX unknown alkylated benzene			536	70	₩00	BOX	trimethyl benzene	
50 004 BQX branched hydrocarbon, C-9 4 004 BQX branched hydrocarbon, C-9 10 004 BQX branched hydrocarbon, C-9 6 004 BQX branched hydrocarbon, C-9 10 004 BQX hexachloro ethane 90 004 BQX branched hydrocarbon, C-10 4 004 BQX unknown alkylated benzene			538	6	004	BQX		<
4 004 BQX 4 004 BQX branched hydrocarbon, C-9 10 004 BQX branched hydrocarbon, C-9 10 004 BQX hexachloro ethane 10 004 BQX branched hydrocarbon, C-10 10 004 BQX unknown alkylated benzene			540	20	004	BOX		
4 004 BQX branched hydrocarbon, C-9 10 004 BQX branched hydrocarbon, C-9 10 004 BQX hexachloro ethane 10 004 BQX branched hydrocarbon, C-10 4 004 BQX unknown alkylated benzene			541	•	00€	BOX		<
10 004 BQX 6 004 BQX branched hydrocarbon, C-9 10 004 BQX hexachloro ethane 90 004 BQX branched hydrocarbon, C-10 4 004 BQX unknown alkylated benzene			542	•	₩	BQX		
6 004 BQX 10 004 BQX 90 004 BQX 4 004 BQX			544	10	004	BOX		<
10 004 BQX 90 004 BQX 4 004 BQX			545	9	004	BQX	branched hydrocarbon, C-9	
90 004 BQX 4 004 BQX			546	10	900	X OH	hexachloro ethane	
• 004 BQX			549	06	004	BOX	branched hydrocarbon, C-10	
			550	-	6 00	BOX	unknown alkylated benzene	

A - No positive identification - Values reported are blank corrected

- Values reported as

Table C8-SP-11. Tentative Identification of Nontarget Compounds. Page 21 of 35.

	Interval	1					
Mumber	(ft)	Mumber	(ppm) *	Number	Lot	Dest-iit Identification	Comments
MK B023	5.8-6.8	550	•	700) NO	cyclic hydrocarbon, C-10	
		551	10	₩00	¥Ö B	unknown alkylated benzene	
		155	10	₩	B 0×	•	<
		552	10	004	BOX	branched hydrocarbon, C-10	
		553	•	900	20 8		~
		554	•	004	BOX	unknown alkylated benzene	
		555	•	004	BOX	branched hydrocarbon, C-11	
		555	10	004	BOX		
		557	· v o	004	BOX		~
		260	20	004	X ON	1,1,2,3,4,4-hexachloro-1,3-butadiene	
		561	'n	904	BQX		<
		266	•	00	BOX		<
		570	•	004	BOX		~
		575	'n	004	BOX	dimethyl naphthalene	
		577	'n	004	BOX	dimethyl naphthalene	
		583	6	004	BQX		~
		585	σ	004	BOX		~
		286	20	₩00	BQX	pentachloroethane	
		589	•	004	BOX		<
		601	6	₩00	BOX	chlordene isomer	
		603	'n	₹00	BQX		<
		604	•	004	XO8		⋖
		605	30	9 00	BOX		<
		909	vo	004	BQX		<
		909	100	004	ВОХ		<
		607	400	9 00	BOX	dichlorinated pyridine	
		609	30	9 00	BOX	dichlorinated pyridine	
		611	07	₩00	BOX		<
		619	•	\$ 00	B OX	tetrachlorvinphos	
		622	7	004	BOX	mitotane isomer	
		929	vo	00	8 0x	m,p'-DDD isomer	
		636	80	100	BOX		<
		636	20	004	BOX		⋖
		637	10	9 00	BOX		⋖
		638	30	₩	BOX		<
		640	20	\$ 00	B OX		⋖
	ě	641	07	\$ 00	80×		⋖
		642	•	900	ВОХ В		<

A - No positive identification * - Values reported are blank corrected

Table CS-SP-11. Tentative identification of Nontarget Compounds. Page 22 of 35.

	Depth	Unknown	Concentration	Sample		Best-fit	
Number	(£¢)	Mumber	• (wdd)	Number	Lot	Identification	Comments
MKE031	8.7-9.5	548	•	002	BRC	hexachloroethane	
		561	100	002	BRC	1,1,2,3,4,4-hexachloro-1,3-butadiene	
		109	09	005	BRC	chlordene	
		\$09	ún	002	BRC	cyclic hydrocarbon, C-18	
		614	10	005	BRC		<
		615	7	002	BRC	unknown substituted benzene	
		622	7	005	BRC	000-,d.	
		623	•	002	BRC	polychlorinated hydrocarbon	
		626	7	005	BRC	m,p'-DDD isomer	
		626	10	002	BRC	p,p'-DDT isomer	
		626	10	002	BRC		<
		628	9	002	BRC		<
		630	ĸ	002	BRC		<
MK 8033	9.6-9.9	547	-	003	BRC	hexachloroethane	
		551	30	003	BRC	branched hydrocarbon, C-11	
		552		003	BRC		
		553	•	003	BRC		
		554	-	003	BRC	branched hydrocarbon, C-11	
		556	•	003	BRC	branched hydrocarbon, C-11	·
		556		003	BRC	branched hydrocarbon, C-11	
		556	•	003	BRC	branched hydrocarbon, C-11	
		260	20	003	BRC	branched hydrocarbon, C-12	
		561	70	003	BRC	1,1,2,3,4,4-hexachloro-1,3-butadiene	
		565	s	003	BRC	branched hydrocarbon, C-12	
		568	20	003	BRC	branched hydrocarbon, C-13	
		693	E	003	BRC	branched hydrocarbon, C-13	
		573	-	003	BRC		
		575	01	003	BRC		
		579	'n	003	BRC	branched hydrocarbon, C-14	
		582	10	003	BRC	branched hydrocarbon, C-15	
		290	Ф.	003	BRC		<
		595	•	003	BRC	branched hydrocarbon, C-17	
		296	30	003	BRC		<
		598	φ	003	BRC		<
		599	s	003	BRC		<
		601	20	003	BRC	chlordene	
		602	•	003	BRC	polychlorinated methyl benzene	
		404	20	003	RBC	ovelie hydrocarbon, C-19	

A - No positive identification- Values reported are blank corrected

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Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 23 of 35.

ľ

Borehole	Depth	Unknown	Concentration	Sample		Best-fit	
Mumber	(ft.)	Number	• (wdd)	Number	Lot	Identification	Comments
MK E033	9.6-9.6	605	10	003	BRC	bolvchlorinated methyl benzese	
		909	10	003	BRC		<
		909	20	003	BRC	polychlorinated methyl benzene	
		809	20	003	BRC	polychlorinated naphthalene	
		6 10	7	003	BRC	unknown phthalate	.
		613	30	003	BRC		· <
		615	9	003	BRC	unknown diester, C-9	
		621	100	003	BRC		<
		622	20	003	BRC	m,p'-DDD isomer	
		624	•	003	BRC	m,p'-DDD isomer	
		625	'n	003	BRC	unknown chlorinated aromatic	
		929	100	003	BRC	chlorophenothalene isomer	
		628	10	003	BRC	chlordene isomer	
		630	96	600	BRC	DDT isomer	
		632	•	003	BRC	polychlorinated aromatic hydrocarbon	
		944	vo	003	BRC	•	<
HKB042	7.7-8.2	535	•	900	MOM	unknown hydrocarbon, C-7	
		539	-	900	BOM	dichlorobenzene isomer	
•		541	-	900	BOM	trimethyl benzene isomer	
		542	2	900	BOW	dichlorobenzene isomer	
		545	9.0	909	BOW	unknown hydrocarbon, C-10	
		547	m	900	BOW	hydrocarbon with 5 chlorines	
		548	20	900	BOW		<
		550	10	200	BOW	alkylated alkane, C-10	
	-	551	6	900	BOM		<
		552	30	900	BQM	3,5,5-trimethyl,2-cyclohexen-1-one	
		553	7	900	BOM	unknown cyclic hydrocarbon, C-ll	
		555	1	900	BOW	unknown with 2 chlorines	
		929	m	900	B Q#	unknown with 2 bromines	
		557	10	900	BOM	trichlorobenzene isomer	
		558	œ	900	BOM	trichlorocyclopentene	
		558	8. 0	902	BOM	unknown with 6 chlorines	
		559	m	900	BOM	alkylated alkane, C-13	
		561	, 20	005	BOM	unknown with 6 chlorines	
		790	~	600	MOR		<
		563	7	900	BOM	possibly trichloro cyclopentene	
		564	7	900	MOB	unknown with one chlorine	
		564	m	900	BOW	cyclic hydrocarbon, C-10	
		565	7	900	BOM		~
		266	₹	900	BQW	unknown with 3 chlorines	
		273	r	300	-		4

C - Plasticizer
F - Low concentration
• - Values reported are blank corrected

Table CS-SP-11. Tentative identification of Nontarget Compounds. Page 24 of 35.

berehole	Depth	Unknown	Concentration	Sample.		Best-fit	
TO THE PER	(12)	Митре	(bdd)	NUMBER	Tot	Identification	Commence
KK RO 42	7.7-6.2	45 45	3.0	500	30	tetrach oronor loses	
	•	898	-	002	BOM	chlorinated unknown	
		5.70	1 60	5	O		4
		571	•	500	100		: «
		572	0.7	900	BOM	unknown with 5 chlorines	
		573	10	900	ВОМ	polycyclic hydrocarbon, possibly	
		•			•		
		575	20	900	BOW	1,1"-oxybisbenzene	
		578	-	900	BOW	unknown polycyclic hydrocarbon	
		579	0.5	900	BOM	alkylated hydrocarbon, C-16	
		280		900	BOM	unknown with 3 chlorines	
		581	6.0	900	BOM	unknown with 5 chlorines	
		582	•	500	2		<
		583	•	002	100		<
		182		500	308	bossibly neutachlorobenzene	
		5.05		Š	NO.	possibly pentachlorosthans	
		589	. 10	002	BOM		<
						energy of the contraction of the same	
		166	9.	500	30	possibly occasing types and	
			- 4 (600	B :	Trumeruly phenolisamer	
		50 F	70	902	B O B	trichloro aromatic	
		296	m	900	BOK	unknown with 6 chlorines	
		597	E	200	BOM		<
		597	m	909	BOW	possibly trimethyl phenol isomer	
		598	-	900	BOW	unknown, possibly brominated	
		599	•	900	BOW	unknown, possibly brominated	
		601	•	900	BOW	possibly chlordene	
		109	20	200	BOM	possibly chlordene	
		909	80	900	BOW	polycyclic bridged hydrocarbon	
		9 09	~	900	BOM	unknown with 3 chlorines	
		909	6.0	900	BOW	unknown with 2 chlorines	
		909	10	900	BOM	~	
		209	m	200	BOM	~	
		607	m	900	BOM	unknown with 3 chlorines	
		608	6	900	BOM		~
		809	-	900	BOW		~
		610	7	900	BOW	possibly isomer of aldrin	
		611	10	900	MOR	unknown with 3 chlorines	
		611	S	200	BOW	unknown phthalate	ر 🖈
		613	300	900	BOM	possibly isomer of aldrin	

A - No positive identification C - Plasticizer F - Low concentration • - Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 25 of 35.

	INCOLAT						
Borehole	Depth	Unknown	Concentration	Sample		Best-fit	
Rumber	(££)	Mumber	e (mdď)	Number	Fot	Identification	Comments
MK B042	7.7-8.2	614	'n	900	BOR	monethly issues of tendrin	
		615	m	900	A 06		•
		617		900	MOR	possibly akton or crotoxyphos	1
		618	1	900	BOM	possibly akton	
		618	20	900	BOM	akton	
		621	90	900	BOM	possibly hexadecanoic acid	۵
		623	1	900	MÖR	possibly isomer of isodrin	
		625	8.0	900	BOM		<
		625	7	900	MOR	possibly isomer of isodrin	
		979	•	900	BOM	possibly isomer of DDT	
		626	•	900	BOM	polycyclic bridged hydrocarbon	
		627	-	900	BOW	chlorinated unknown	
		628	91	900	BOW	polycyclic bridged hydrocarbon	
		630	-	900	BOW	octadecanoic acid isomer	۵
		630	0.7	909	BOW	bridged polycyclic hydrocarbon	
		631	7	900	BOW	bridged polycyclic hydrocarbon	
		632	1	900	₩ÖM	bridged polycyclic hydrocarbon	
		633	-	200	BOW	chlorinated bridged polycyclic	
						hydrocarbon	
		634	7	900	BOM	possibly endrin ketone	
		634	m	900	190 8	unknown alkene or alcohol GT C-18	
		635	œ	900	BOM	chlorinated unknown	
		636	7	900	BOM	chlorinated unknown	
		637	-	200	BOM	dioctyl phthalate	a J
		637	0.5	900	₩Ö₩	bridged polycyclic hydrocarbon	
		638	7	900	BOW	chlorinated unknown	
		0 7 9	v	900	BOW	chlorinated unknown	
		641	•	900	BOM	chlorinated unknown	
		643	9.0	900	₩.		<
		647	-	200	BOM	possibly isomer of aldrin	
NK 2043	7.7-8.2	538	9.0	900	₩ 08	unknown hydrocarbon, C-9	
		545	99	900	BOM		<
		548	•	900	MOR	hexachloroethane	
		551	m	900	BOM	trimethyl decane	
		553	•	900	BOW	1-(1-ethoxyethoxy)-hexene isomer	
		556	0.5	900	BOM	unknown hydrocarbon, C-11	
		557	8.0	900	BOM	pentachloro hydrocarbon, C-11	
		855	m	900	BOM	trichloro benzene isomer	

A - No positive identification
C - Plasticizer
D - Derived from natural products
F - Low concentration
GT - Greater than
- - Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 26 of 35.

						Company of the control of the contro	
	Interval	1					
Number	(ft)	Number	(bdu).	Number	Ş	Identification Com	Comments
MK E043	7.7-8.2	559	•	900	MÖG	trichlorocyclopentene	
		260	~	900	MOR	alkynated hydrocarbon, C-11	
		561	S	900	BOW	tetrachloro cyclohydrocarbon	
		561	10	900	BOW	1,1,2,3,4,4-hexachloro-1,3-butadiene	
		562	m	900	BOW	unknown with 4 chlorines	
		563	7	900	BOM	trichloro cyclopentene	
		26 5	₽.0	900	BOM	unknown hydrocarbon, C-12	
		266	•	900	BOM	unknown pentachloro aromatic	
		267	m	900	BOM	trichlorocy:lopentane	
		268	-	900	BOM	alkynated hydrocarbon, C-13	
		570	30	900	BOW	polycyclic bridged hydrocarbon	
		570	•	900	BOW	tetrachloro benzene isomer	
		571	8.0	900	BOW	unknown with 6 chlorines	
		572	0.6	900	BOW	unknown with 4 chlorines	
		572	4.0	900	BOM	tetrachloro unknown aromatic	
		574	30	900	BOM	2-ethenyl-naphthalene	
		575	m	900	MQ8	unknown hydrocarbon with 5 chlorines	
		576	20	900	BOW	1,1'-oxybis benzene	
		517	7	900	BOW	hexachlorobutene	
		579	0.5	900	BQW	unknown hydrocarbon, C-15	
		581	0.7	900	BQW	tetrachlorocyclopentene	
		582	7	900	MOG	unknown with 6 chlorines	
		583	0.7	900	BOW	pentachloro unknown aromatic	
		284	σ.	900	MOG	pentachloro benzene	
		586	1	900	BOW	unknown with 4 chlorines	
		591	7	900	BOW	octachloro cyclic hydrocarbon, C-16	
		594	-	900	BOW	tetrachloro unknown aromatic	
		296	30	900	BOW	1,2,3,4-tetrschloro-5-(dichloromethylene)-	
						1,3-cyclopentadiene	
		597	6.0	900	BOM	hexachloro unknown aromatic	
		298	9.0	900	MOM	possibly isoner of chlordene	
		601	20	900	BOM	chlordene	
		9 09	m	900	BOM	polycyclic bridged hydrocarbon	
		604	4.0	900	BOW	monochloro untnown aromatic	
		909	E	900	BOM	polycyclic bridged hydrocarbon	
		607	₽.0	900	MOR	unknown with 3 chlorines	
		607	0.3	900	BOM	~	_
		608	7	900	BOM	~	_
		809	♦.0	900	₩Ö	heptachloro unknown aromatic	
		609	0.5	900	MQ#	<	_

A - No positive identification - Values reported are blank corrected

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Table CS-WP-11. Tentative Identification of Nontarget Compounds. Page 27 of 35.

1

]

	Interval						
Borehole	Depth	Unknown	Concentration	Sample		Best-fit	
Mumber	(25)	Mumber	• (mdd)	Number	Şţ	Identification	Comments
MERO43	7.7-8.2	9	œ	900	3		
	;	3 3		900			3
		710	9.0	909	5	retrachloro unknown aromatic	
		613	0.0	900	BOM	tetrachloro unknown aromatic	
		919	0.0	900	BOM	hexachloro unknown aromatic	
		617	9.0	900	BOM	tetrachloro unknown aromatic	
		617	m	900	BO	polycyclic bridged hydrocarbon	
		618	20	900	BOM	polycyclic bridged hydrocarbon	
		621	10	900	308		<
		622	6	900	MOM	dieldrin isoser	}
		624	9.0	900	HOM	unknown with 6 chlorines	
		6.25	2	900	3		
		929		900	3 3	DOT LEGITAL DESCRIC	
			2	9 6	2 2		•
		870	n =	900			< -
		630	2	900			٠ ،
			? (900			<
		632	9.0	900	BQ.	polycyclic bridged hydrocarbon	
		634	4.0	900	BOM	polycyclic bridged hydrocarbon	
		635	8. 0	900	BOM	unknown alkane, C-25	
		636	7.0	900	BOW		<
		637	0.3	900	BOW	tetrachloro cyclic hydrocarbon	
		637	₹.0	900	BOM	unknown alkene or alcohol	
		638	7. 0	900	BOW	unknown aromatic	
		639	••0	900	BOM	Birex	
		644	7	900	BOM	hexachloro unknown aromatic	
MK B044	7.6-7.9	543	-	200	BO 4	branched hydrocarbon, C-9	
		544	٠	007	BOM		<
		547	9.0	000	BOW		<
		548	'n	. 200	BOW	hexachloroethane	
		551	m	000	BOW	branched hydrocarbon	
		553	w	000	BOM		<
		558	7	000	BOM	trichlorobengene	
		558	10	000	BOM	trichlorocyclopentene	
		260	7	007	BOW		<
		561	70	007	BOW	1,1,2,3,4,4-hexachloro-1,3-butadiene	
		562	7	007	BOM		< .
		563	•	007	BOM	trichlorocyclopentene	
•		565	-	007	BOW		<
		995	•	007	BOM		<
		267	7	007	BOW	chlorinated cyclopentene	
		257	c	700	A CE	chlorinated methyl benzene	

A - No positive identification C - Plasticizer F - Low concentration * - Values reported are blank corrected

Table C8-SP-11. Tentative Identification of Nontarget Compounds. Page 28 of 35.

1

Minimport Original Minimport Concentration Sample Beart Cate Indinitive Concentration Conc	•		Concentration (ppm)*	Sample Number	Set	Best-fit Identification	
7,6-7,9 569 20 007 BDM tetrachloro cyclopentene 7,6-7,9 569 20 007 BDM tetrachloro cyclopentene 570 1 007 BDM tetrachloro cyclopentene 571 1 007 BDM tetrachloro benzene 572 1 007 BDM tetrachloro benzene 573 1 007 BDM tetrachloro cyclopentene 574 1 007 BDM tetrachloro benzene 575 1 007 BDM tetrachloro benzene 577 1 007 BDM tetrachloro cyclopentene 578 1 007 BDM chloriasted hydrocarbon, C-12 581 1 007 BDM chloriasted hydrocarbon 582 1 007 BDM chloriasted hydrocarbon, C-12 583 1 007 BDM chloriasted hydrocarbon, C-12 584 1 007 BDM chloriasted hydrocarbon, C-12			, (wdd)	Number	25	Identification	
7.4-7.9 569 20 007 BDM tetrachloro cyclopantene 559 30 007 BDM tetrachloro benzene 571 40 007 BDM tetrachloro benzene 574 40 007 BDM tetrachloro benzene 575 10 007 BDM holdrichted ally benzene 576 11 007 BDM chlorinated ally benzene 578 0.6 007 BDM chlorinated ally benzene 580 1 007 BDM chlorinated ally benzene 581 1 007 BDM chlorinated ally benzene 582 1 007 BDM chlorinated ally benzene 582 1 007 BDM chlorinated ally benzene 581 1 007 BDM chlorinated ally benzene 582 1 007 BDM chlorinated ally benzene 583 1 007 BDM chlorinated ally benzene 584							Comment
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,							
1 007 80W tetrachloro benzene 1 007 80W chlorinated hydrocarbon, C-12 1 007 80W chlorinated hydrocarbon, C-12 1 007 80W chlorinated hydrocarbon 0.6 007 80W chlorinated alkyl benzene 0.6 007 80W chlorinated alkyl benzene 1 007 80W chlorinated alkyl benzene 1 007 80W chlorinated alkyl benzene 1 007 80W chlorinated alkyl benzene 1 007 80W chlorinated alkyl benzene 1 007 80W chlorinated alkyl benzene 1 007 80W chlorinated alkyl benzene 1 007 80W chlorinated alkyl benzene 1 007 80W chlorinated alkyl benzene 1 007 80W chlorinated hydrocarbon, C-6 10 80W chlorinated hydrocarbon, C-12 10 80W chlorinated hydrocarbon, C-12 10 80W chlorinated hydrocarbon, C-6 10 80W chlorinated hydrocarbon, C-12 10 80W chlorinated hydrocarbon, C-12 10 80W chlorinated hydrocarbon, C-12 10 80W chlorinated hydrocarbon, C-12 10 80W chlorinated hydrocarbon, C-12 10 80W chlorinated hydrocarbon, C-12 10 80W chlorinated hydrocarbon, C-12 10 80W chlorinated hydrocarbon, C-12 10 80W chlorinated hydrocarbon, C-12 10 80W chlorinated hydrocarbon, C-12 10 80W chlo			07	200		rectachiolo cyclopantene	
10 007 80W cutterior Denies of Color Book contracted by Cocarbon, C-12 1 007 80W chlorinated by Cocarbon C-12 1 007 80W chlorinated by Cocarbon C-12 1 007 80W chlorinated alkyl benzene D-1 007 80W chlorinated commerce C-1 007 80W chlorinat		770		200	2 2		•
1 007 80W polyaromatic hydrocarbon, C-12 3 007 80W chlorinated hydrocarbon 1 007 80W chlorinated hydrocarbon 1 007 80W chlorinated hydrocarbon 2 007 80W chlorinated alkyl benzene 3 007 80W chlorinated alkyl benzene 1 007 80W chlorinated alkyl benzene 2 007 80W chlorinated alkyl benzene 3 007 80W delta lindane isomer 4 007 80W delta lindane isomer 5 007 80W cachlorobenzene 6 0.4 007 80W cachlorocyclopentadiene 6 0.4 007 80W chlorinated hydrocarbon, C-6 6 0.4 007 80W chlorinated hydrocarbon, C-6 6 0.4 007 80W chlorinated hydrocarbon, C-6 6 0.7 007 80W chlorinated hydrocarbon, C-6 6 0.8 007 80W chlorinated hydrocarbon, C-6 6 007 80W chlo			, ,	9 6	2		
40 007 804 chloridated hydrocarbon, C-12 80 007 804 chloridated hydrocarbon 80 007 804 hexachlorobutene 80 007 804 hexachlorobutene 81 007 804 chloridated alkyl benzene 82 007 804 alpha lindane isomer 83 007 804 lindane isomer 80 007 804 lindane isomer 80 007 804 chloridated hydrocarbon, C-6 80 007 804 celtalindane isomer 80 007 804 celtalindane isomer 80 007 804 celtalindane isomer 80 007 804 celtalindane isomer 80 007 804 celtalindane isomer 80 007 804 celtalindane isomer 80 007 804 celtalindane isomer 80 007 804 celtalindane isomer 80 007 804 celtalindane isomer 80 007 804 dichloropyridine 80 007 804 dichloropyridine 81 007 804 dichloropyridine 82 007 804 dichloropyridine 83 007 804 little celtalindane 84 007 804 little celtalindane 85 007 804 little celtalindane 86 007 804 little celtalindane 87 007 804 little celtalindane 80 007 804 little celtalindan		572	-1	001	80		<
3 007 80W chlorinated hydrocarbon 6 007 80W 1,1-oxybjabanzene 7 007 80W chlorinated alkyl benzene 7 007 80W cetachlorobenzene 7 007 80W delta lindane isomer 8 007 80W cetachlorobenzene 8 007 80W cetachlorocopazene 9 007 80W cetachlorocopazene 10 007 80W cetachlorocopazene 10 007 80W cetachlorocyclopentadiene 10 007 80W chlorinated hydrocarbon, C-6 10 007 80W chloropyridine 10 007 80W chloropyridine 11 007 80W chloropyridine 12 007 80W chloropyridine 13 007 80W dichloropyridine 14 007 80W dichloropyridine 15 007 80W dichloropyridine 16 007 80W dichloropyridine 17 007 80W dichloropyridine 18 007 80W dichloropyridine 19 007 80W dichloropyridine 10 007 80W dichloropyridine 10 007 80W dichloropyridine 11,2,3,4-tetrachloro-1,3-cyclopentadiene 15 007 80W low nonanedioic acid, dibutyl ester 16 007 80W low		574	07	00	MQ M	polyaromatic hydrocarbon, C-12	
80 007 80W hexachlorobutene 1 007 80W hexachlorobutene 1 007 80W hexachlorobutene 2 007 80W chlorinated alkyl benzene 1 007 80W alpha lindane isomer 1 007 80W lindane isomer 1 007 80W lindane isomer 2 007 80W lindane isomer 2 007 80W celta lindane isomer 3 007 80W leated lindane isomer 4 007 80W hexachlorobenzene 6 0.4 007 80W hexachlorinated hydrocarbon, C-6 6 0.7 80W lindane isomer 6 0.8 80W chloropyridine 6 0.9 80W lindane isomer 6 0.9 80W lindane isomer 6 0.9 80W lindane isomer 6 0.9 80W lindane isomer 6 0.9 80W lindane isomer 6 0.9 80W lindane isomer 6 0.07 80W lindane isomer 6 0.07 80W lindane isomer 6 0.07 80W lindane isomer 6 0.07 80W lindane isomer 6 0.07 80W lindane isomer 6 0.07 80W lindane isomer 6 0.07 80W lindane isomer 6 0.07 80W lindane isomer 6 0.07 80W lindane isomer 6 0.07 80W lindane isomer 6 0.07 80W lindane isomer 6 0.07 80W lindane isomer 6 0.07 80W lindane isomer 6 0.07 80W lindane 6 0.07		574	m	007	MOM.	chlorinated hydrocarbon	
1 007 80% hexachlorobutene 0.6 007 80% chlorinated alkyl benzene 2 007 80% chlorinated alkyl benzene 1 007 80% chlorinated alkyl benzene 2 007 80% lindane isomer 1 007 80% lindane isomer 2 007 80% lindane isomer 2 007 80% cetachlorobenzene 0.4 007 80% cetachlorocyclopentadiene 0.5 007 80% hexachlorinated hydrocarbon, C-6 0.4 007 80% hexachlorinated hydrocarbon, C-6 0.5 007 80% chloropyridine 0.7 007 80% chloropyridine 0.7 007 80% dichloropyridine 1 007 80% dichloropyridine 1 007 80% dichloropyridine 2 007 80% dichloropyridine 1 007 80% dichloropyridine 1 007 80% dichloropyridine 2 007 80% dichloropyridine 3 007 80% dichloropyridine 8 007 80% dichloropyridine 8 007 80% dichloropyridine 9 007 80% dichloropyridine 1 007 80% dichloropyridine		576	08	007	BOW	l, l'-oxybisbenzene	
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3 007 BQW dichloropyridine 4 007 BQW dichloropyridine 8 007 BQW unknown phthalate 20 007 BQW 1,2,3,4-tet achloro-1,3-cyclopentadiene 0.6 007 BQW 1,2,3,4-tet achloro-1,3-cyclopentadiene 1 007 BQW nonanedioic acid, dibutyl ester 2 007 BQW 1,2,3,4-tetrachloro-1,3-cyclopentadiene 2 007 BQW 1,2,3,4-tetrachloro-1,3-cyclopentadiene 1 somer 2 007 BQW 2,3,4-tetrachloro-1,3-cyclopentadiene 2 007 BQW 2,3,4-tetrachloro-1,3-cyclopentadiene 2 007 BQW 3,3,4-tetrachloro-1,3-cyclopentadiene		909	7	000	BOW	dichloropyridine	
4 007 BQW dichloropyridine 8 007 BQW unknown phthalate 20 007 BQW unknown phthalate 3 007 BQW 1,2,3,4-tet achloro-1,3-cyclopentadiene 0.8 007 BQW 1,2,3,4-tet achloro-1,3-cyclopentadiene 1 007 BQW nonanedioic acid, dibutyl ester 2 007 BQW 1,2,3,4-tetrachloro-1,3-cyclopentadiene isomer 2 007 BQW 2,3,4-tetrachloro-1,3-cyclopentadiene 20 007 BQW 2000		607		007	BOW		«
8 007 BQW unknown phthalate 20 007 BQW 1,2,3,4-tet achloro-1,3-cyclopentadiene 0.6 007 BQW 1,2,3,4-tet achloro-1,3-cyclopentadiene 1 007 BQW nonanedioic acid, dibutyl ester 2 007 BQW 1,2,3,4-tetrachloro-1,3-cyclopentadiene isomer 2 007 BQW 1,2,3,4-tetrachloro-1,3-cyclopentadiene 20 007 BQW 2,3,4-tetrachloro-1,3-cyclopentadiene		609	•	007	BOW	dichloropyridine	
20 007 BQW 1,2,3,4-tet achloro-1,3-cyclopentadiene 0.6 007 BQW 1,2,3,4-tet achloro-1,3-cyclopentadiene 0.8 007 BQW 1,2,3,4-tet achloro-1,3-cyclopentadiene 2 007 BQW 1,2,3,4-tet achloro-1,3-cyclopentadiene isomer 2 007 BQW 20,9 007 BQW 20,9 007 BQW 20,9 007 BQW 20,9 007 BQW 20,9 007 BQW 20,9 007 BQW 20,9 007 BQW 20,9 007 BQW		609	•	007	BOM	unknown phthalate	
3 007 BQW 1,2,3,4-tet achloro-1,3-cyclopentadiene 0.6 007 BQW 0.8 007 BQW 1 007 BQW nonanedioic acid, dibutyl ester 2 007 BQW 1,2,3,4-tetrachloro-1,3-cyclopentadiene 1 007 BQW 1,2,3,4-tetrachloro-1,3-cyclopentadiene 2 007 BQW 2,9,4-tetrachloro-1,3-cyclopentadiene 2 007 BQW 2,9,4-tetrachloro-1,3-cyclopentadiene		611	20	007	BOW		~
0.6 007 BGW 0.8 007 BQW 1 007 BQW nonanedioic acid, dibutyl ester 2 007 BGW 1,2,3,4-tetrachloro-1,3-cyclopentadiene 2 007 BGW 1,2,3,4-tetrachloro-1,3-cyclopentadiene 2 007 BGW 20 007 BGW		612	e	001	BOW	1,2,3,4-tet achloro-1,3-cyclopentadiene	
0.8 007 BQW nonanedioic acid, dibutyl ester 2 007 BQW nonanedioic acid, dibutyl ester 2 007 BQW 1,2,3,4-tetrachloro-1,3-cyclopentadiene 1 150mer 2 007 BQW 1,2,3,4-tetrachloro-1,3-cyclopentadiene 2 007 BQW 1,0,3,4-tetrachloro-1,3-cyclopentadiene		613	9.0	007	BOM		~
1 007 BQW nonanedioic acid, dibutyl ester 2 007 BQW 1,2,3,4-tetrachloro-1,3-cyclopentadiene 1 007 BQW isomer 2 007 BQW 200		614	8.0	000	MOR		~
2 007 BQW 0.9 007 BQW 2 007 BQW 20 007 BQW		614	-	007	BOW	nonanedioic acid, dibutyl ester	۵
0.9 007 BQW 2 007 BQW 20 007 BQW		615	7	007	BOW		~
2 007 BQW 20 007 BQW		616	0.9	007	BOW	1,2,3,4-tetrachloro-1,3-cyclopentadiene	
2 007 20 007						isomer	
20 007		617	7	007	BOM		⋖
		618	20	007	BOW		~

A - No positive identification
D - Derived from natural products
• - Values reported are blank corrected

Table CS-SP-11. Tentative identification of Nontarget Compounds. Page 29 of 35.

Banahat a		Mark of the					
Number	(ft)	Mumber	Concentration (ppm)	Number	Fot	Dest-Ill Identification	Comments
MX B044	7.6-7.9	618	-	007	BOW		<
		621	70	007	BOM		<
		622	6	200	BOW		<
		623	7	007	M O8		<
		624	0.1	007	MOR		<
		625	9.0	007	BOR		<
		979	•	007	BOW		<
		627	7	007	BOM		<
		627	•	007	BOW		<
		628	-	000	B O £		<
		630	0.7	007	BOM	unknown hexanedioic acid, diester	C, F
		631	m	007	₩ 04		` «
		633	7	007	BOW	unknown hexanoic acid, diester	
		634	9.0	000	BOM		<
		634	0.5	007	BOM	branched hydrocarbon, C-25	
		636	-	007	BOW		<
		636	9.0	007	BOW	unknown phthalate	L '0
		637	0.5	007	BOM		<
		639	~	007	BOW		<
		639	0.0	007	BOM		<
		640	-	007	BOM		<
		641	8.0	007	₩O#		<
		642	m	007	BOW	polychlorinated aromatic hydrocarbon	
		643	9.0	007	B O#		⋖
		643	0.7	007	BOM		ĸ
		644	7	007	BOW	halogenated hydrocarbon	
		646	6.0	007	BOM		⋖
		649	9.0	007	3 0		<
MKE061	8.2-8.8	536	20	002	BQ.	unknown benzene	
		540	20	005	BOW	unknown benzene	
		545	300	005	BOW	unknown methyl ester	
		546	10	002	BOM	unknown methyl ester	
		547	9	002	MOR		⋖
		548	300	002	BOR	unknown methyl ester	
		551	200	005	BOW	trimethyl decane isomer	
		552	10	007	BOW	polycyclichydrocarbon, C-10	
		552	10	002	BOM		
		553	7	005	BOM		<
		553	70	005	BOM		<
		553	40	002	BOM	unsaturated hydrocarbon, C-12	
		554	01	007	BOW	alkene, C-12	

A - No positive identification
C - Plasticizer
F - Low concentration
- - Values reported are blank corrected
Site CS-SP
4928A/1041A
Rev. 7/01/88

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 30 of 35.

Borehole	Interval Depth	Unknown	Concentration	Sample		Bos	
1	(49)	1	(man)	1	•		,
MUMOR	1557	Mumber	(add)	Number	3	Identification	Comment
MKB061	8.2-8.8	555	1	,	3		
		555		200	200	CIALIDAIL DEIZETTE	•
		556	. 70	005		alkane (-1)	4
		556	20	000	90		
		557	.	005	BO		
		557	10	005	BOM	alkane, C-12	
		558	30	005	BOM	trichlorobenzene isomer	
		558	30	002		trichlorocyclopentene	
		558	1	005	BOW	unsaturated hydrocarbon, C-12	
		4559	07	005	MOR.	unknown cyclic hydrocarbon	
		260	100	005	BOM	alkane, C-12	
		561	30	002	BOW	alkane, C-12	
		561	Q	200	BOW	1,1,2,3,4,4-hexachloro-1,3-butadiene	
		562	6	007	BOW		<
		563	10	005	BOW	unknown with 3 chlorines	
		564	20	002	BOM		<
		565	10	005	МОЯ	unsaturated hydrocarbon	
		565	30	002	BOM	alkane, C-13	
		999	30	005	MQ8	bridged polycyclic hydrocarbon	
		268	70	002	BOW		
		268	97	005	BOW		<
		268	50	002	BQW	tetrachlorocyclopentene	
		570	30	007	BOW		⋖
		570	6	200	BOM		<
		571	10	002	BOW	cyclic hydrocarbon	
		572	40	200	BOW		<
		572	09	200	BQW		<
		573	v	002	BOW	alkane, C-14	
		573	20	007	BOM	alkane, C-14	
		574	02	002	BQW	unknown aromatic	
		574	ø	007	BOM		<
		575	20	002	BOM	alkane, C-14	
		575	100	005	BOW	1,1'-oxybis benzene	
		576	•	007	BOM		<
		576	ın	007	ВОМ		<
		577	₹	007	BOM	dimethyl naphthalene	
		577	20	005	BOM	dichlorobenzene isomer	
		578	30	007	BOM		<
		579	50	005	BOM		
		280	80	002	BOW	alkane, C-15	
		280	7	007	MOR		
		582	70	005	BOM	alkane, C-15	
		582	4	000	200	HOLDOW HANDELD	

A - No positive identification • - Values reported are blank corrected

Table CS-SP-11. Tentative identification of Nontarget Compounds. Page 31 of 35.

Minimport Concentration		Interval						
6.2-6.6 533 4 002 BOM Pentachloro bengene 5.2-6.6 543 4 002 BOM alkane, C-16 555 4 002 BOM alkane, C-16 556 2 002 BOM alkane, C-16 557 2 002 BOM alkane, C-16 558 2 0 002 BOM alkane, C-16 558 2 0 002 BOM alkane, C-17 558 2 0 002 BOM alkane, C-17 551 4 0 002 BOM alkane, C-17 552 6 0 002 BOM alkane, C-16 553 6 0 0 BOM alkane, C-16 553 6 0 0 DO BOM alkane, C-16 553 6 0 0 DO BOM alkane, C-16 553 6 0 0 <td< th=""><th>Borehole</th><th>Depth</th><th>Unknown</th><th>Concentration</th><th>Sample</th><th></th><th>Best-fit</th><th></th></td<>	Borehole	Depth	Unknown	Concentration	Sample		Best-fit	
9.2-6.6 584 4 002 BQW pentachioro benzene 584 4 002 BQW pentachioro benzene 585 20 002 BQW unknown arcoaktic 586 20 002 BQW unknown arcoaktic 587 20 002 BQW alkane, C-16 589 40 002 BQW alkane, C-17 591 6 002 BQW alkane, C-17 592 6 002 BQW alkane, C-17 593 4 002 BQW alkane, C-17 593 4 002 BQW alkane, C-17 593 4 002 BQW alkane, C-17 594 40 002 BQW alkane, C-17 595 40 002 BQW alkane, C-17 594 40 002 BQW alkane, C-17 595 40 002 BQW alkane, C-17 6	Number	(ft)	Number	• (mdd)	Number	Ęţ	Identification	Commen
\$44 310 002 B09 pentachilore benzene \$45 24 002 B09 alkane, C-16 \$45 20 002 B09 alkane, C-16 \$46 20 002 B09 alkane, C-16 \$40 002 B09 alkane, C-16 \$51 20 002 B09 alkane, C-17 \$52 6 002 B09 alkane, C-17 \$53 4 002 B09 alkane, C-17 \$54 4 002 B09 alkane, C-17 \$55 4 002 B09 alkane, C-17 \$54 4 002 B09 alkane, C-18 \$54 4 002 B09 alkane, C-17 \$54 4 002 B0	KK B061	8.2-8.8	583	-	005	MOM		4
4 002 B094 alkane, C-16 50 002 B094 unknown aromatic 50 002 B094 unknown aromatic 50 002 B094 alkane, C-16 50 002 B094 alkane, C-16 50 002 B094 alkane, C-17 50 002 B094 alkane, C-17 6 002 B094 alkane, C-17 70 002 B094 alkane, C-17 80 002 B094 alkane, C-17 90 002 B094 alkane, C-17 90 002 B094 alkane, C-17 90 002 B094 alkane, C-19 90 002 B094 bicylic bridged hydrocarbon 90 002 B094 bicyclic bridged hydrocarbon 90 002 B094 bicyclic bridged hydrocarbon 90 002 B094 bicyclic bridged polycyclic 90 002 B094 bicyclic bridged bolycyclic 90 002 B094 bicyclic bridged bylycyclic 90 002 B094 bicyclic bridged bolycyclic 90 002 B094 bicyclic bridged bylycyclic 90 002 B094 bicyclic bridged bylycyclic 90 002 B094 bicyclic bridged bylycyclic 90 003 003 003 90 003 003 003 003 90 003 003 003 003			584	30	002	BOW	pentachloro benzene	
20 002 BGW unknown aromatic 20 002 BGW alkane, C-16 20 002 BGW alkane, C-16 20 002 BGW alkane, C-16 20 002 BGW alkane, C-17 4 002 BGW alkane, C-17 40 002 BGW alkane, C-17 40 002 BGW alkane, C-17 40 002 BGW alkane, C-17 40 002 BGW alkane, C-17 40 002 BGW alkane, C-17 40 002 BGW alkane, C-17 40 002 BGW alkane, C-17 40 002 BGW alkane, C-17 40 002 BGW alkane, C-17 50 002 BGW unknown phenol 50 002 BGW bit alkane, C-19 50 002 BGW bit alkane 50 003 BGW bit al			585	-	005	BOM	alkane, C-16	
20 002 BQM unknown aromatic 7 002 BQM alkane, C-16 20 002 BQM alkane, C-17 4 002 BQM alkane, C-17 4 002 BQM alkane, C-17 40 002 BQM 1,4-dichloro-2-(2-chloroethyl) benzene 80 002 BQM 1,4-dichloro-2-(2-chloroethyl) benzene 80 002 BQM 1,4-dichloro-2-(2-chloroethyl) benzene 80 002 BQM hexachloro-cyclic hydrocarbon 80 002 BQM whrown cyclic hydrocarbon 80 002 BQM bicyclic bridged hydrocarbon 80 002 BQM bicyclic bridged hydrocarbon 80 002 BQM bicyclic bridged hydrocarbon 80			585	20	005	BOM		<
7 002 BQW alkane, C-16 20 002 BQW alkane, C-16 20 002 BQW alkane, C-17 20 002 BQW alkane, C-17 4 002 BQW alkane, C-17 4 002 BQW alkane, C-17 10 002 BQW alkane, C-17 40 002 BQW alkane, C-17 40 002 BQW alkane, C-17 40 002 BQW alkane, C-17 30 002 BQW alkane, C-19 40 002 BQW alkane, C-19 50 002 BQW alkane, C-19 50 002 BQW bicyclic bridged hydrocarbon alkane, C-19 50 002 BQW bicyclic bridged hydrocarbon bicyclic bridged hydrocarbon bicyclic bridged hydrocarbon bicyclic bridged hydrocarbon bicyclic bidged hydrocarbon bidged bidged bydrocarbon bidged bid			586	20	007	BOM		<
90 002 BQW alkane, C-16 4 002 BQW alkane, C-17 5 002 BQW alkane, C-17 6 002 BQW alkane, C-17 10 002 BQW alkane, C-17 40 002 BQW alkane, C-17 40 002 BQW alkane, C-17 30 002 BQW bitycoic bydrocarbon BQW alkane, C-19 5 002 BQW bitycoic bridged hydrocarbon BQW bityclic bridged bydrocarbon BQW bityclic bridged bydrocarbon BQW bityclic bridged bydrocarbon BQW bydrocarbon C-22 5 002 BQW bityclic bridged bolycyclic bydrocarbon BQW bydrocarbon BQW bydrocarbon BQW bydrocarbon BWW bydrocarbon			587	1	005	BO	unknown aromatic	
20 002 BQM 4 002 BQM alkane, C-l7 5 002 BQM alkane, C-l7 6 002 BQM alkane, C-l7 10 002 BQM alkane, C-l7 40 002 BQM alkane, C-l7 40 002 BQM alkane, C-l7 80 002 BQM harachloro cyclic hydrocarbon 80 002 BQM unknown phenol 80 002 BQM hydrocarbon 80 002 BQM bicyclic bridged hydrocarbon 80 002 BQM hydrocarbon 80 002 BQM hydrocarbon 80			588	06	002	BOW		
4 002 BQM alkane, C-17 6 002 BQM alkane, C-17 10 002 BQM alkane, C-17 40 002 BQM alkane, C-17 40 002 BQM alkane, C-17 40 002 BQM alkane, C-17 80 002 BQM alkane, C-17 80 002 BQM alkane, C-17 80 002 BQM alkane, C-17 100 002 BQM alkane, C-19 100 002 BQM bicyclic bridged hydrocarbon 5 002 BQM bicyclic bridged hydrocarbon 6 002 BQM bicyclic bridged bolycyclic 8 002 BQM bicyclic bridged polycyclic 10 002 BQM bicyclic bri			589	20	005	BQM		<
20 002 BQW alkane, C-17 4 002 BQW alkane, C-17 10 002 BQW alkane, C-17 40 002 BQW alkane, C-17 40 002 BQW alkane, C-17 30 002 BQW alkane, C-17 30 002 BQW alkane, C-17 30 002 BQW unknown phenol 80 002 BQW unknown phenol 20 002 BQW alkane, C-19 700 002 BQW unknown phenol 80 002 BQW chlordene 80 002 BQW chlordene 80 002 BQW bicyclic bridged hydrocarbon 80 002 BQW bicyclic bridged hydrocarbon 80 002 BQW bicyclic bridged hydrocarbon 80 002 BQW bicyclic bridged hydrocarbon 80 002 BQW bicyclic bridged hydrocarbon 80 002 BQW bydrocarbon, C-22 80 002 BQW bydrocarbon, C-22 80 002 BQW bydrocarbon			290	•	200	BOW		⋖
6 002 BOW alkane, C-17 10 002 BGW 1,4-dichloro-2-(2-chloroethyl) benzene 40 002 BGW alkane, C-17 30 002 BGW alkane, C-17 30 002 BGW unknown phenol 80 002 BGW unknown phenol 80 002 BGW alkane, C-19 700 002 BGW bicyclic bridged hydrocarbon 80 002 BGW bydrocarbon, C-22 80 002 BGW bydrocarbon, C-22 80 002 BGW bydrocarbon			591	70	200	BOM	alkane, C-17	
10			592	•	007	BOW		~
10			593	•	002	₽Ŏŧ	alkane, C-17	
40 002 BQM alkane, C-17 40 002 BQM herachloro cyclic hydrocarbon 80 002 BQM unknown phenol 80 002 BQM unknown cyclic hydrocarbon 20 002 BQM unknown cyclic hydrocarbon 100 002 BQM chlordene 5 002 BQM bicyclic bridged hydrocarbon 6 002 BQM bicyclic bridged hydrocarbon 10 002 BQM bicyclic bridged polycyclic 5 002 BQM bydrocarbon 10 002 BQM bydrocarbon 20 002 BQM bydrocarbon 4 002 BQM bydrocarbon			593	10	007	BQW	1,4-dichloro-2-(2-chloroethyl) benzene	
40 002 BQW alkane, C-17 30 002 BQW unknown cyclic hydrocarbon 80 002 BQW unknown cyclic hydrocarbon 20 002 BQW unknown cyclic hydrocarbon 20 002 BQW alkane, C-19 100 002 BQW chlordene 5 002 BQW bicyclic bridged hydrocarbon 80 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 700 002 BQW bicyclic bridged hydrocarbon 80 002 BQW bicyclic bridged hydrocarbon 10 002 BQW bydrocarbon, C-22 5 002 BQW bydrocarbon, C-22 6 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon 10 002 BQW bydrocarbon			594	0+	007	BOM	alkane, C-17	
30 002 BQW hexachloro cyclic hydrocarbon 80 002 BQW unknown phenol 80 002 BQW unknown phenol 20 002 BQW alkane, C-19 700 002 BQW chlordene 5 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 10 BQW bydrocarbon, C-22 5 BQW bydrocarbon 10 BQW bydrocarbon 20 BQW bydrocarbon <td></td> <td></td> <td>595</td> <td>0+</td> <td>007</td> <td>MÖM</td> <td>alkane, C-17</td> <td></td>			595	0+	007	MÖM	alkane, C-17	
8 002 BQM unknown phenol 80 002 BQM unknown phenol 20 002 BQM alkane, C-19 700 002 BQM chlotdene 5 002 BQM bicyclic bridged hydrocarbon 6 002 BQM bicyclic bridged hydrocarbon 10 BQM bydrocarbon, C-22 5 BQM bydrocarbon 10 BQM bydrocarbon 20 BQM bpt isomer 40 BQM bpt isomer 40 BQM bpt isomer 40 BQM bpt isomer 40 BQM bpt isomer <			296	30	002	BOM	hexachloro cyclic hydrocarbon	
80 G02 BQW unknown cyclic hydrocarbon 20 002 BQW alkane, C-19 700 002 BQW chlordene 5 002 BQW bicyclic bridged hydrocarbon 80 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 6 002 BQW hydrocarbon, C-22 8 002 BQW hydrocarbon, C-22 5 002 BQW bbw bbw 10 002 BQW bbb isomer 20 002 BQW bbb isomer 20 002 BQW bbb isomer 30 002 BQW bbb isomer 40 002 BQW			597	6 0	005	BOW	unknown phenol	
20 002 BQW alkane, C-19 700 002 BQW chlordene 5 002 BQW bicyclic bridged hydrocarbon 80 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bydrocarbon 7 002 BQW hydrocarbon 8 002 BQW akton 10 002 BQW hydrocarbon 20 002 BQW hydrocarbon 20 002 BQW bydrocarbon 20 002 BQW bDD isomer 80 002 BQW bydrocarbon			598	80	007	BOW	unknown cyclic hydrocarbon	
700 002 BQW chlordene 5 002 BQW bicyclic bridged hydrocarbon 80 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 8 002 BQW bicyclic bridged hydrocarbon 9 002 BQW bicyclic bridged hydrocarbon 10 BQW bicyclic bridged hydrocarbon 10 BQW bicyclic bridged hydrocarbon 20 BQW bicyclic bridged bydrocarbon 20 BQW bicyclic bridged polycyclic 30 BQW bicyclic bridged polycyclic 40 BQW bicyclic bridged polycyclic 80 BQW bicyclic bridged bolycyclic			009	20	007	BOW	alkane, C-19	
5 002 BQW bicyclic bridged hydrocarbon 80 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bydrocarbon, C-22 8 002 BQW hydrocarbon, C-22 5 002 BQW bydw 10 002 BQW bbnu 20 002 BQW beachlore bridged polycyclic 20 002 BQW bbn isomer 20 002 BQW bbn isomer 20 002 BQW bbn isomer 40 002 BQW bbn isomer 60 002 BQW bcw bdw bcw bdw 80 002 BQW			601	700	002	BOM	chlordene	
100 002 BQW bicyclic bridged hydrocarbon 80 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 8 002 BQW hydrocarbon 8 002 BQW hydrocarbon 10 002 BQW akton 10 002 BQW beach bridged polycyclic 20 002 BQW beach bridged polycyclic 20 002 BQW bbridged bolycyclic 30 002 BQW bbridged polycyclic 40 002 BQW bbridged bolycyclic 40 002 BQW bbridged bolycyclic 40 002 BQW bbridged bolycyclic 40 002 BQW bridged bolycyclic 40 002 BQW bridged bolycyclic 40 002 BQW bridged bolycyclic 40			603	•	005	BOW		⋖
80 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 6 002 BQW bicyclic bridged hydrocarbon 8 002 BQW hydrocarbon, C-22 8 002 BQW bydrocarbon 10 002 BQW bbb isomer 20 002 BQW bbb isomer 20 002 BQW bbb isomer 20 002 BQW bbb isomer 30 002 BQW bbb isomer 40 002 BQW hydrocarbon 20 002 BQW hydrocarbon 20 BQW hydrocarbon			\$09	100	002	BOW	bicyclic bridged hydrocarbon	
5 002 BQM bicyclic bridged hydrocarbon 6 002 BQM bicyclic bridged hydrocarbon 6 002 BQM hydrocarbon, C-22 8 002 BQM hydrocarbon 4 002 BQM bbw 10 002 BQM hydrocarbon 20 002 BQM hydrocarbon 20 002 BQM bb isomer 30 002 BQM bb isomer 80 002 BQM bb isomer 40 002 BQM hydrocarbon 20 002 BQM hydrocarbon 20 BQM hydrocarbon			909	80	005	BOW	bicyclic bridged hydrocarbon	
6 002 BQW bicyclic bridged hydrocarbon 5 002 BQW bQW 6 002 BQW hydrocarbon, C-22 5 002 BQW bQW carbon, C-22 5 002 BQW akton 10 002 BQW akton 10 002 BQW beachloro bridged polycyclic hydrocarbon 20 002 BQW beachloro bridged polycyclic hydrocarbon 20 002 BQW bb isomer 20 002 BQW bDT isomer 40 002 BQW bDT isomer			909	so.	005	BOM		<
6 002 BQW hydrocarbon, C-22 8 002 BQW hydrocarbon, C-22 5 002 BQW DDWU 10 002 BQW akton 10 002 BQW hexachloro bridged polycyclic 20 002 BQW hexachloro bridged polycyclic 20 002 BQW hexachloro bridged polycyclic 20 002 BQW DDT isomer 30 002 BQW DDT isomer 40 002 BQW DDT isomer 40 002 BQW hexachloro bridged polycyclic 40 002 BQW hexachloro bridged bolycyclic 40 002 BQW hexachloro bridged b			609	•	002	BOW	bicyclic bridged hydrocarbon	
5 002 BQW hydrocarbon, C-22 6 002 BQW bDMU 5 002 BQW DDMU 10 002 BQW akton 20 002 BQW bDM isomer 20 002 BQW hexachloro bridged polycyclic 20 002 BQW DDT isomer 30 002 BQW DDT isomer 80 002 BQW DDT isomer 40 002 BQW hydrocarbon 20 002 BQW hydrocarbon 20 002 BQW hydrocarbon			613	9	002	BOW		<
6 002 BQW hydrocarbon, C-22 5 002 BQW DBMU 10 002 BQM akton 20 002 BQM DBD isomer 20 002 BQM hexachloro bridged polycyclic 20 002 BQM DBD isomer 30 002 BQM DBD isomer 80 002 BQM DBT isomer 40 002 BQM hexachloro bridged polycyclic 40 002 BQM hydrocarbon 20 002 BQM			615	5	005	BOW		⋖
5 002 BQW DDNU 4 002 BQW akton 10 002 BQW DDD isomer 20 002 BQW bDD isomer 20 002 BQW hydrocarbon 20 002 BQW DDT isomer 80 002 BQW DDT isomer 40 002 BQW hydrocarbon 20 002 BWQ hexachlore bridged polycyclic hydrocarbon hydrocarbon hydrocarbon			616	•	007	BOM	hydrocarbon, C-22	
4 002 BQW akton 10 002 BQW DDD isomer 20 002 BQM DDD isomer 20 002 BQW hexachloro bridged polycyclic 30 002 BQW DDD isomer 40 002 BQW DDT isomer 40 002 BQW hexachloro bridged polycyclic 60 002 BWQ hexachloro bridged polycyclic 20 002 BWQ hydrocarbon 20 002 BQW			617	15	002	BOM	DDMC	
10 002 BQW DDD isomer 20 002 BQW hexachloro bridged polycyclic 20 002 BQW hexachloro bridged polycyclic 20 002 BQW DDD isomer 30 002 BQW DDT isomer 40 002 BQW DDT isomer 40 002 BQW hexachloro bridged polycyclic 60 002 BWQ hexachloro bridged polycyclic 70 002 BQW			618	~	200	BOM	akton	
20 002 BQM DDD isomer 20 002 BQM hexachloro bridged polycyclic 20 002 BQM bDM isomer 30 002 BQM bDT isomer 40 002 BQM bDT isomer 40 002 BQM hexachloro bridged polycyclic 60 002 BWQ hexachloro bridged polycyclic 20 002 BQM			620	10	002	BOW		<
20 002 BQW hexachloro bridged polycyclic 20 002 BQW hydrocarbon 30 002 BQW DDT isomer 40 002 BQW DDT isomer 40 002 BQW hexachloro bridged polycyclic 60 002 BWQ hexachloro bridged polycyclic 20 002 BQW			622	20	007	BOM	DDD isomer	
20 002 BQM DDD isomer 30 002 BQM DDT isomer 80 002 BQM DDT isomer 40 002 BQM hexachlore bridged polycyclic 60 002 BWQ hexachlore bridged polycyclic 20 002 BQM			624	20	005	BOM	hexachloro bridged polycyclic	
20 002 BQM DDD isomer 30 002 BQM DDT isomer 40 002 BQM DDT isomer 60 002 BQM hexachloro bridged polycyclic 20 002 BQM hydrocarbon							hydrocarbon	
30 D02 BQW DDD isomer 80 002 BQW DDT isomer 40 002 BQW hexachloro bridged polycyclic 60 002 BWQ hexachloro bridged polycyclic 20 002 BQW			625	70	002	BOM		<
80 002 BQW DDT isomer 40 002 BQW hexachloro bridged polycyclic hydrocarbon 20 002 BQW hydrocarbon			625	30	007	MOR	DDD isomer	
40 002 BQW hexachloro bridged polycyclic 60 002 BWQ hydrocarbon 20 002 BQW			979	80	007	BOW	DDT isomer	
60 002 BWQ hexachloro bridged polycyclic hydrocarbon 20 002 BQM			627	07	007	BOW		<
hydrocarbon 20 002 BQM			627	09	002	OM8	hexachloro bridged polycyclic	
20 002 BQW							hydrocarbon	
			627	20	007	BOM		<

A - No positive identification - - Values reported are blank corrected

Table CS-SP-11. Tentative identification of Nontarget Compounds. Page 32 of 35.

Porehole	Interval	Unknoten	ac tantanton	of come of		4 7 9 1 4 6 6 0	
Tour Maria	1497	Tager N		Mumber	ģ	Tank (fination	
THE PARTY OF THE P	,,,,,		1 2 2 2 2	1 Acquire			
MX 2061	8.2-8.8	628	•	002	B O#	bridged polycyclic hydrocarbon	
		628	10	002	BO	hexachloro bridged polycyclic hydrocarbon	Ę
		629	080	200	BOM	DDT isomer	
		630	70	200	B O		<
		631	100	007	BOW		<
		632	100	007	BOM		~
		632	20	002	BOW		<
		633	30	007	BOM		<
		634	Q	002	MOR		<
		634	20	200	3 08		<
		636	-	005	BOM		<
		637	•	002	BOM		<
		9	10	002	BOH		<
		641	20	002	100		<
		642	20	002	BOW		~
		643	30	002	B O#		<
		9	90	005	BOW		<
		645	30	005	BOM		~
		645	•	005	BOW		<
		949	ø	002	BOM		~
		949	•	005	BOW		<
		650	•	002	BOM		۲
MKE062	8.2-9.2	544	30	003	BOW	trimethy) benzene isomer	
		875	7	003	NON	unknown bydrocarbon, C-10	
		550	. 0.	003		evelo hydrocarbon, about C-10	
		551	50	003	100	trimethy hydrocarbon isomer	
		554	-	003	BOW	unknown alkene or alcohol	
		554	ĸſ	003	BOW	unknown cyclic hydrocarbon	
		260	•	003	BOW	unknown hydrocarbon, C-11	
		561	70	003	BOW	hydrocarbon with 6 chlorines	
		563	y	003	₽ŎĄ	unknown cyclic hydrocarbon	
		564	~	003	BOM	alkene, C-12	
		565	10	003	AO A	unknown cyclic hydrocarbon	
		999	200	003	BOW	unknown with 1 bromine	
		268	•	003	BOM		⋖
		576	•	003	BOM	trichlorobenzenamine isomer	
		577	9	003	BOM	trichloro aromatic	
		583	'n	003	BOM	unknown aromatic	
		599	10	003	₩Ö₩	unknown hydrocarbon with 4 bromines	
		601	20	003	BOM	chlordene	
		604	'n	003	BOW	unknown with 3 chlorines	
		909	•	003	B O#	unknown with 2 chlorines	

A - No positive identification- Values reported are blank corrected

Table re-SP-11. Tentative Identification of Nontarget Compounds. Page 33 of 35.

MVEG62 6.2-9.2 60 NKEG63 6.2-9.2 60 NKEG63 6.6-9.2 53 NKEG63 6.6-9.2 53 55 55 55 55 55 55 55 55 55 55 55 55 5	Unkhown Mumber 607 608 610 613 625 626 626 636 640 641 537 538 540 541	Concentration (ppm)* 60 4 20 5 10 20 20 20 11	Mumber 003 003 003 003 003 003 004 004	200 BOW BOW BOW BOW BOW BOW BOW BOW BOW BOW	Best-fit Identification unknown with 3 chlorines cyclic hydrocarbon unknown aromatic isomer of isodrin bridged polycyclic hydrocarbon bridged polycyclic hexachloro hydrocarbon alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	COMPONIE COMPONIE
8.2-9.2 8.6-9.2	200	20 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	003 003 003 003 003 004 004 004	#08 #08 #08 #08 #08 #08 #08 #08 #08 #08	unknown with 3 chlorines unknown with 2 chlorines cyclic hydrocarbon unknown aromatic isomer of isodrin bridged polycyclic hydrocarbon bridged polycyclic hydrocarbon hydrocarbon alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	
6 9.2	7	8 - 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	000 000 0000 0000000000000000000000000	# # # # # # # # # # # # # # # # # # #	unknown with 3 chlorines cyclic hydrocarbon unknown aromatic isomer of isodrin bridged polycyclic hydrocarbon bridged polycyclic hexachloro hydrocarbon alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	« (« « «
6.6 9.2	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	**************************************	000 000 0000 0000000000000000000000000	800 B B B B B B B B B B B B B B B B B B	unknown with 2 chlorines cyclic hydrocarbon unknown aromatic isomer of isodrin bridged polycyclic hydrocarbon bridged polycyclic hexachloro hydrocarbon alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	a :
• • • • • • • • • • • • • • • • • • •	2	g & v & v w w & b w w & w & w & w & w & w & w & w	000 000 0000 0000 0000 0000 0000 0000 0000		unknown with 2 chlorines cyclic hydrocarbon unknown aromatic isomer of isodrin bridged polycyclic hydrocarbon bridged polycyclic hexachloro hydrocarbon alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	د هم.
• • • • • • • • • • • • • • • • • • •	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	884888 104 F884	003 003 003 004 004 004 004 004	800 B B B B B B B B B B B B B B B B B B	cyclic hydrocarbon unknown aromatic isomer of isodrin bridged polycyclic hydrocarbon bridged polycyclic hexachloro hydrocarbon alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	٠ ٠ ٠٠
• • •	2000 2000 2000 2000 2000 2000 2000 200	N + N N N N N N N N N N N N N N N N N N	00333330000000000000000000000000000000	800 B B B B B B B B B B B B B B B B B B	unknown aromatic isomer of isodrin bridged polycyclic hydrocarbon bridged polycyclic hekachloro hydrocarbon alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	
	2000 3000 2000 2000 2000 2000 2000 2000	4 W W W B B B B B B B B B B B B B B B B	00333330000000000000000000000000000000	800 B BOW BOW BOW BOW BOW BOW BOW BOW BOW B	isomer of isodrin bridged polycyclic hydrocarbon bridged polycyclic hexachloro hydrocarbon hydrocarbon alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	د هم ه
6.6-9.2	22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m	000 000 000 000 000 000 000 000 000 00	804 804 804 804 804 804 804 804 804 804	bridged polycyclic hydrocarbon bridged polycyclic hemachloro hydrocarbon alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	
6.6.9.2	2	ww 204 - 2044	00333333333333333333333333333333333333	MOM MOM MOM MOM MOM MOM MOM MOM MOM MOM	bridged polycyclic hydrocarbon bridged polycyclic hexachloro hydrocarbon alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	4 4 4
6-9.2	2 90 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	S 10 4 6 2 10 4	00 00 00 00 00 00 00 00 00 00 00 00 00	MOM MOM MOM MOM MOM MOM MOM MOM MOM MOM	bridged polycyclic hexachloro hydrocarbon alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	4 4 4
6-9-2	4 0 8 8 4 2 0 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	010 7 7 7 8 0 10 9 11 9 11 9 11 9 11 9 11 9 11 9	003 003 004 004 004	8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	hydrocarbon alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	~ ~ ~
• • • • • • • • • • • • • • • • • • •		004 F R R R R R R R R R R R R R R R R R R	0003 0004 004	804 804 804 804 804	alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	~~
	0 7	0 4	000000000000000000000000000000000000000	80M 80M 80M 80M	alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	< <
6.6-9.2	4	#	00 00 004 004	90 BOW BOW BOW BOW BOW BOW BOW BOW BOW BOW	alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	<
9.6-9.2	7 8 8 8 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	~ ~ ~ ~ ~ ~	00 0 00 0 00 0 00 0	BOW BOW BOW	alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	
	33 33 34 34 34 34 34 34 34 34 34 34 34 3	r	* * * * * 0 0 0 0 0 0	BOW BOW BOW	alkylated benzene, C-9 alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	
G G G G G G	4 2 0 8 8 8 4 2 4 4 0 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	W W H 4	* * * 6 8 8	BOW BOW BOW	alkylated benzene, C-9 alkylated benzene, C-9 cyclic hydrocarbon, C-10	
ሽ ሹ ሹ ሹ ሹ ሽ ሽ	# * * * * * * * * * * * * * * * * * * *	≈ ⊓ ≈	* * 00	BOW BOW	alkylated benzene, C-9 cyclic hydrocarbon, C-10	
# X & X & X	2 T 2	- 4	₹00	BO#	cyclic hydrocarbon, C-10	
.	4.2	•		BOM		
20 20 20 20 20 20 20 20 20 20 20 20 20 2	42	•	100		alkylated benzene, C-9	
48 88 88	•	01	004	BOM	hydrocarbon, C-3, with 2 chlorines	
555	244	•	\$ 00	BOW	alkylated benzene, C-9	
95	551	10	004	BOM	branched hydrocarbon, C-11	
	260	m	900	BOM	branched hydrocarbon, C-11	
95	561	10	₩00	BOM	1,1,2,3,4,4-hexachloro-1,3-butadiene	
95	999	20	₩00	₩0a	bromohexene	
95	567	7	₩	#O#		<
95	568	4.0	00	₽Ŏ₩		<
57	574	~	004	BOM	tetrachlorobenzene	
98	58d	•	004	MOM	ester, mw GT 180	
58	589	₹.0	9 00	B O4	substituted benzothiazole	
59	591	0.7	004	BOM	hydrocarbon, C-17	
58	598	e	004	MOM MOM	3,3,4,4-tetrabromohexane	
53	599	7	900	BOW	3, 3, 4, 4-tetrabromohexane	
09	601	10	004	BOM	chlordene	
9	604	m	900	BOW		<
9	605	7	90	BO₩		<
	909	•	00	BOM	dichloropyridine	
09	909	~	004	B O4	chlorinated hydrocarbon	
09	607	30	₩	BOW	chlorinated pyridine	
39	609	7	004	B O#		<
19	609	2	♦ 00	MOM	aldrin-R	
9	614	30	004	B O	isodrin	
(9)	614	10	₽00	BOW	isodrin	

A - No positive identification GT - Greater than • - Values reported are blank corrected

Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 34 of 35.

Borehole	Depth	Unknown	Concentration	20mp		Best-fit	
Mumber	(£t)	Mumber	• (wdd)	Mumber	Eot	Identification	Comments
HK RO63	8.6-9.2	615	~	700		1-chloro-4-chlorophanylmethyl bengene	
		621	l ve	•	200	dieldrin inomer	
		626	•	004	BOM		4
		627	0.5	004	BOW	branched hydrocarbon, C-24	
		627	70	004	BOM	branched hydrocarbon, C-24	
		628	•	004	BQN	cyclic hydrocarbon, C-24	
		630		004	BOM	cyclic hydrocarbon, C-24	
		630	•••	004	3 0		<
		631	m	004	MOM.	chlorinated hydrocarbon	
		631	•	₽00	B O#	chlorinated hydrocarbon	
		633	0.5	004	BOM		<
		633	e.0	104	BOM	endrin ketone	
		634	0.7	00	BOM	isodrin derivative	
		. 635	-	004	BOM		<
		636	-	900	BOW		<
		929	0.9	004	BOW	phthalate ester	ů,
		637	-	004	BO		<
		637	7	•00	BQ#		<
		637	-	004	BOH		<
		637	7	900	BOW	dichlorinated pyridine	
		638	7	00	BOH		⋖ •
		639	r	•00	3		<
		049		900	3 OB	dichlorinated pyridine	
		•	•	* 00	Š	dichiofinated pyridine	
		642	7	004	BOM		<
		643	9.0	00	M OM		<
		645	•	7 00	NO.		<
		650		004	BO	branched hydrocarbon, C-26	
HKE071	5.7-6.4	637	0.5	800	BRD	bis(2-ethylhexyl) phthalate	6. 5
MKE072	5.7-6.7			600	BRD		*
MKE073	5.8-6.5			010	BRD		*
HKE191	3.6-4.4	989	♦• 0	00	BRC	branched hydrocarbon, C-25	
MKE192	3.6-4.6	609	8.0	9005	BRC	unknown phthalate	.
		621	~	coo	מאנ	nexadecendic acto, diesiei	•

A - No positive identification
C - Plasticizer
D - Derived from natural products
F - Low concentration
K - None detected
- - Values reported are blank corrected

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Table CS-SP-11. Tentative Identification of Nontarget Compounds. Page 35 of 35.

	Interval						
Borehole Mumber	Depth (ft)	Unknown	Concentration (ppm)*	Sample Number	<u>r</u> ot	Best-fit Identification	Comments
MK E 193	3.4-4.2	609	0.7	900	BRC	unknown phthalate	u '5
1003	4.2-4.8	416	ď	400	×		
1000		9 6	, «	300	2		4
		B 600	,	600	Š		< -
		606	•	600	Š	Action of the Section	<
		9 4 9 8	0.7	900	\$ \$0 B	Diamend nydiocarbon, C-45	<
MKB202	4.0-4.5	576	•	900	BOX		<
		578	· in	900	BOX		
		610	m	900	BOX	unknown phthalate	د د
		621	m	900	BOX	•	` <
		636	0.5	900	BOX		<
		637	0.5	900	BOX	unknown phthalate	a. ⁵ U
		647	4.0	900	BOX.		٠,
MK B 203	4.1-5.0	576	10	001	BOX	trichlorobenzenamine	
		578	10	007	BOX		<
		609	-	007	BQX	unknown phthalate	, n
		621	8.0	007	NO8	•	*
		636	0.7	007	BOX	branched hydrocarbon, C-25	
		637	4.0	007	X Ö	unknown phthalate	1 0
		647	4.0	007	B OX		*
MKE211	0.6-0.8			007	ВОХ		~
MKB212	7.8-9.0	609	· • 0	003	BQY	hexadecanoic acid	Q

A - No positive identification
C - Plasticizer
D - Derived from natural products
F - Low concentration
K - None detected
* - Values reported are blank corrected

Zinc was found in all intervals at concentrations ranging from 85 to 99 ug/g. Copper was found in four samples at 34 to 42 ug/g. Arsenic was detected in the uppermost samples, ranging from 12 to 300 ug/g. Cadmium and chromium were above their indicator ranges in the 8.0 to 9.0 ft interval at 10 ug/g, and 45 ug/g, respectively. Lead was within its indicator range at 25 ug/g in the 8.0 to 9.0 ft and 17.0 to 18.0 ft intervals.

Several halogenated and nonhalogenated nontarget compounds were tentatively identified in this boring. Nonhalogenated hydrocarbons detected had a maximum concentration of 1 ppm. In the 27.0 to 28.0 ft interval, an isomer of aldrin was tentatively identified at 100 ppm. A dichlorinated organo phosphoric acid was tentatively identified at 1 ppm in the 17.0 to 18.0 ft interval. This compound is possibly related to organo phosphate pesticides and was detected in the same interval as parathion.

Manhole W25

Elevated levels of 26 compounds were detected in samples from Manhole W25 (Figure CS-SP-6a). The uppermost interval (6.9-7.9 ft) contained all 26 of these compounds. All compounds except chloroform, methylene chloride, copper and zinc showed rapidly decreasing concentrations with increasing depth. Chloroform, chromium, copper, lead and zinc were the only analytes detected in the third, fourth, and fifth intervals (16.2-17.2, 21.2-22.1, and 26.2-27.2 ft). Samples from the first two intervals (6.9-7.9 and 11.8-12.8 ft) contained the following volatile organic compounds: 1,1,2-trichloroethane (20 and 1 ug/g), bicycloheptadiene (20 and 8 ug/g), carbon tetrachloride (20 and 4 ug/g), chloroform (400 and 6 ug/g), chlorobenzene (20 ug/g), dibromochloropropane (6,000 and 2,000 ug/g), ethylbenzene (20 ug/g), m-xylene (100 and 1 ug/g), methylene chloride (6 and 9 ug/g), o- and p-xylene (40 ug/g), tetrachloroethylene (40 and 5 ug/g), and toluene (300 and 7 ug/g). Semivolatile organic compounds detected in the first two intervals included aldrin (10,000 and 200 ug/g), dibromochloropropane (10,000 and 80 ug/g), dichlorodiphenyltrichloroethane (DDT) (70 and 5 ug/g), dieldrin (100 ug/g), hexachlorocyclopentadiene (90 ug/g), and isodrin (300 ug/g). The third, fourth, and fifth intervals yielded only one volatile compound, chloroform at 1 ug/g in the 26.2 to 27.2 ft interval, and no semivolatile compounds.

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Cadmium, copper, zinc, arsenic, and mercury were all within or above their indicator ranges in samples from Boring W25. Cadmium was above its indicator range in the first interval under the manhole (6.9 to 7.9 ft) at 5.0 ug/g. Copper was found slightly above its indicator range in the first four sampling intervals at concentrations of 37 to 43 ug/g, and within its indicator range in the last sampling interval at a concentration of 26 ug/g. Zinc was above its indicator range in all five samples, with concentrations of 85 to 110 ug/g. Arsenic was found at 130 ug/g in the first sampling interval, well above its indicator range. Mercury was found in the first two sampling intervals at concentrations of 8.8 ug/g (6.9 to 7.9 ft) and 0.065 ug/g (11.8 to 12.8 ft).

Thiodiglycol and chloroacetic acid were detected in the first sampling interval (6.9 to 7.9 ft) at 14 ug/g and 230 ug/g, respectively. These compounds were not detected in any of the other samples.

Several nontarget compounds were tentatively identified in the GC/MS scan in the 6.9 to 7.9 and 11.8 to 12.8 ft intervals. The compounds included dichloropropene (900 and 40 ppm), unknowns with 3 chlorines (700 and 300 ppm), 1,3,5-trimethyl benzene (300 ppm), and several other halogenated compounds at concentrations ranging from 2 to 90 ppm. Also present in samples from Manhole W27 were compounds tentatively identified as hexadecanoic acid, nonanedioic acid, and dibutyl ester at concentrations of 0.7 ppm or less.

Manhole W27

In Manhole W27 (Figure CS-SP-6a), 22 pesticides, solvents, process intermediates, metals, and breakdown products were above their indicator levels. In general, the three uppermost samples beneath the manhole (6.5-7.5, 11.5-12.5, and 16.2-17.2 ft intervals) contained more detectable analytes and higher concentrations of analytes than the two deeper intervals. Many nontarget halogenated and nonhalogenated compounds also were tentatively identified in the boring, generally decreasing in number and concentration with depth.

Seven volatile compounds were detected in at least three of the samples, including: bicycloheptadiene (1-30 ug/g), carbon tetrachloride (2-20 ug/g),

Site CS-SP 0097U/0185A Rev. 9/14/88 chloroform (5-10 ug/g), methylene chloride (2-3 ug/g), tetrachloroethylene (.9-10 ug/g), and toluene (1-50 ug/g). Dibromochloropropane was detected in the volatile analysis at concentrations that ranged from 30 to 400 ug/g and in the semivolatile analysis at 9 to 100 ug/g. The 11.5 to 12.5 ft interval contained benzene at 1 ug/g. Concentrations of aldrin, detected in four samples, ranged from 7 to 100 ug/g. Other semivolatile compounds detected were: chlorophenylmethyl sufone in one sample (0.3 ug/g), dichlorodiphenylethane (DDE) in one sample (2 ug/g), dichlorodiphenyltrichloroethane (DDT) in three samples (0.8-30 ug/g), dieldrin in three samples (1-90 ug/g), hexachlorocyclopentadiene in two samples (0.7 and 0.8 ug/g), isodrin in two samples (3 and 6 ug/g), and supona in two samples (0.7 and 2 ug/g).

Copper and zinc were above their indicator ranges in all samples at concentrations ranging from 36 to 41 ug/g and 84 to 130 ug/g, respectively. Chromium and lead were above their indicator ranges in one sample each. Chromium was found at 72 ug/g in the 16.2 to 17.2 ft interval and lead was found at 49 ug/g in the 6.5 to 7.5 ft interval. Arsenic was found in the 6.5 to 7.5 ft interval at 15 ug/g, and mercury was found in the two uppermost samples at 2.0 and .061 ug/g.

The number of nontarget compounds tentatively identified in this boring decreases significantly with depth. In the 6.5 to 7.5 interval, 17 nonhalogenated compounds were tentatively identified at concentrations less than or equal to 3.0 ppm, and 41 halogenated compounds were tentatively identified with a maximum concentration of 50 ppm. The 11.5 to 12.5 ft interval contained 4 nonhalogenated and 6 halogenated compounds at concentrations ranging from 0.4 to 1 ppm and 0.4 to 20 ppm, respectively. No nonhalogenated hydrocarbons were tentatively identified beneath this sample. A total of 8 halogenated compounds were tentatively identified in the three deepest samples with a maximum concentration of 6 ppm. Also present in the three deepest samples were naturally occurring acids and esters at low concentrations.

Manhole 4-3

In Manhole 4-3 (Figure CS-SP-6a), methylene chloride, trichloroethylene, aldrin, zinc, and copper were within or above their indicator levels. Methylene chloride was found at 1 ug/g in the three uppermost samples, trichloroethylene was found at 0.6 ug/g in the 8.2 to 9.2 ft interval, and aldrin was detected at 2 ug/g in the 3.2 to 4.2 ft interval. Zinc was within its indicator range in the 17.2 to 18.2 and 22.2 to 23.2 ft intervals at 72 and 73 ug/g, respectively, and was above its indicator range in the 12.2 to 13.2 ft interval at 82 ug/g. Copper was found at 20 ug/g in the 17.2 to 18.2 ft interval.

Two nontarget compounds were tentatively identified in the 17.2 to 18.2 ft interval -- bromodichloromethane (9 ppm) and an alkylated phenol (0.4 ppm).

Manhole 6-1

Samples from Manhole 6-1 (Figure CS-SP-6a) contained 1,1,1-trichloroethane, 1,1,2-trichloroethane, carbon tetrachloride, tetrachloroethylene, copper, lead, and zinc within or above their indicator levels. The second sampling interval (17.5 to 18.5 ft) contained 0.8 ug/g of 1,1,2-trichloroethane. In the 23.5 to 24.5 ft interval, 1,1,1-trichloroethane, carbon tetrachloride, and tetrachloroethylene were detected at 0.5 ug/g, 0.6 ug/g, and 1 ug/g, respectively. Copper and zinc were above their indicator ranges in the 12.5 to 13.5, 17.5 to 18.5, and 23.5 to 24.5 ft intervals at concentrations that ranged from 42 to 47 ug/g and 85 to 110 ug/g, respectively. The 29.0 to 30.0 ft interval contained copper at 30 ug/g and zinc at 80 ug/g. Lead was within its indicator range at 36 ug/g in the 12.5 to 13.5 ft interval.

No nontraget compounds of note were tentatively identified in samples collected from below Manhole 6-1. Some naturally occurring acids and esters were tentatively identified at concentrations of 2 ppm or less.

Trench CS01

In Trench CS01 (Figure CS-SP-6b), dieldrin was detected in Borings 2 through 7, and in Boring 11 in the 4.0 to 5.0 ft interval (directly beneath pipe

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Site CS-SP 0097U/0185A Rev. 9/14/88 joints) at concentrations ranging from 0.3 ug/g to 2 ug/g. It was also detected in the composite grab sample (Sample 10) at 5 ug/g.

Tetrachloroethylene was detected directly beneath the pipe in Borings 1, 4, 5, 6, and 7 at concentrations ranging from 0.5 to 6 ug/g and in Boring 8 in the second interval at 3 ug/g.

Methylene chloride was found in Borings 1, 6, and 7, all at 2 ug/g, and aldrin was detected in Borings 4 and 11 at 0.4 and 1 ug/g, respectively. Copper was found in all samples from Borings 1 through 10 within or above its indicator range at concentrations ranging from 29 to 51 ug/g. Grab Sample 10 contained chromium above its indicator range at 64 ug/g and lead within its indicator range at 39 ug/g. Zinc was within its indicator range in the 8.0 to 9.0, 13.0 to 14.0, and 22.0 to 23.0 ft intervals of Boring 9 at 76, 73, and 73 ug/g, respectively. In all other samples in the trench, zinc was above its indicator range, with a maximum concentration of 820 ug/g in the composite grab sample (Sample 10). Arsenic was found directly under the pipe in Borings 1 through 8 and in Grab Sample 10 at concentrations ranging from 5.3 to 24 ug/g. Mercury was found in Borings 1, 4, 5, 6, 7, and 10 at concentrations ranging from 0.075 to 2.3 ug/g.

Several halogenated nontarget compounds were tentatively identified in Borings 2 through 7 and 11, which are located directly beneath the pipe. The highest concentration, 20 ppm, occurred in Boring 6 for a compound tentatively identified as 2-[(4-chloro-6-(ethylamino)-1,3,5-triazine-2-y1)amino]-2-methyl propanenitrile. In Boring 8, the 4.0 to 5.0 and 8.0 to 9.0 ft intervals contained a few halogenated compounds with maximum concentrations of 9 ppm, and a nonhalogenated hydrocarbon with a maximum concentration of 0.8 ppm.

Nontarget compounds of noise tentatively identified in Boring 9 were halogenated organic compounds at 1 ppm each in the 8.0 to 9.0 and 18.0 to 19.0 ft intervals. The composite grab sample (10) contained two chlorinated hydrocarbons (20 and 40 ppm) and an unknown aromatic at a concentration of 80 ppm.

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Soil gradation analysis of the physical sample from Boring 12 showed a high percentage by weight of fines in the bedding material (Figures CS-SP-5a and 5b). Silt or clay constituted 50 to 60 percent, fine sand 30 percent, and medium to coarse grained sand 10 to 20 percent, indicating that native material was used for bedding. Though this material was well compacted, the overall foundation for the pipes appeared adequate but not of high quality. Calculations for the structural stability of the pipe are included in Appendix CS-C.

Trench CS02

Ten samples were collected from Trench CS02, 8 from the 7.8 to 8.8 ft interval, and two from the 11.8 to 12.8 ft interval (Figure CS-SP-6c). Analyte concentrations did not decrease with either depth or horizontal distance from the pipe. More than half of the samples contained bicycloheptadiene (0.9-70 ug/g), carbon tetrachloride (5-200 ug/g), chloroform (2-50 ug/g), m-xylene (0.9-10 ug/g), tetrachloroethylene (2-90 ug/g), toluene (0.4-300 ug/g), aldrin (3-40,000 ug/g), isodrin (20-1000 ug/g), copper (34 ug/g, maximum), zinc (99 ug/g, maximum), arsenic (10-80 ug/g), and mercury (0.057-1.3 ug/g).

Dibromochloropropane was detected in nine samples in the volatile analysis (60-7000 ug/g) and in seven samples in the semivolatile analysis (0.4-20,000 ug/g). Dicyclopentadiene was detected once in the volatile analysis at 2 ug/g in Boring 7 and once in the semivolatile analysis at 8 ug/g in Boring 4. Benzene, o- and p-xylene, and ethylbenzene were detected only in saturated samples at the water table at concentrations equal to or less than 9 ug/g; and chlorobenzene was detected in Boring 1 (20 ug/g) and Boring 4 (2 ug/g) and in the 11.8 to 12.8 ft intervals of Borings 7 and 8 at 4 ug/g.

In samples from directly beneath pipe joints, dichlorodiphenyltrichloroethane (DDT) was detected twice at concentrations ranging from 2 to 500 ug/g, dieldrin was detected four times between 6 and 200 ug/g, and hexachlorocyclopentadiene was detected three times at levels between 50 and 500 ug/g. Supona was detected in Boring 4 at 2 ug/g.

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Site CS-SP 0097U/0185A Rev. 9/14/88 Cadmium, copper, lead, zinc, arsenic, and mercury were found within or above their indicator ranges. Cadmium was found only once, in Boring 2 at 1.3 ug/g. Copper was within its indicator range in Borings 2, 4, 6, 7, and 8 at concentrations of 24 to 34 ug/g. Lead was found in four samples from Borings 1, 3, 5, and 6 at concentrations of 59 to 79 ug/g. Zinc was found within its indicator range in three samples from Borings 7 and 8 (67 to 77 ug/g) and above its indicator range in Borings 2 and 6 (99 and 90 ug/g). Arsenic was found above its indicator range in Borings 1, 2, 3, 4, and 7 at concentrations of 11 to 80 ug/g. Mercury was above its indicator range in all samples except those from Boring 8, where it was found once within its indicator range at 0.057 ug/g (11.8-12.8 ft). Elevated concentrations of mercury ranged from 0.19 to 1.3 ug/g.

In addition, numerous nontarget compounds were tentatively identified in the GC/MS scan. Both hydrocarbons and halogenated organic compounds tentatively were identified in all but 3 borings (Borings 2, 5, and 6 contained only halogenated organic compounds). Concentrations of halogenated compounds ranged from 2 to 500 ppm and included isomers of aldrin, endrin, isodrin, and dibromochloropropane. Hydrocarbons were tentatively identified at concentrations ranging from 3 to 700 ppm. The highest concentrations of both types of compounds were detected in the 11.8 to 12.8 ft interval of Boring 7, including an unsaturated acyclic hydrocarbon (700 ppm), an unknown aromatic (400 ppm), and an isomer of bromochloropropane (500 ppm).

Analysis of soil gradation (Figures CS-SP-5c and 5d) shows that the bedding material is composed of 40 to 60 percent silt or clay, 30 to 40 percent fine grained sand, and 10 to 30 percent medium to coarse grained sand or gravel. The high percentage of fines indicates that native material was used for the pipe foundation. Calculations (Appendix CS-C) for the structural stability of the pipe under worst trench earth loading conditions and for poor Class D bedding in accordance with ASTM C12-82 (ASTM, 1986) show that the pipe was designed properly. However, longitudinal cracks seen on the pipe section between Joints 3 and 4 indicated a structural failure, possibly caused by inadequate compaction of material under the haunches of the pipe.

Trench CS03

Chloroform, carbon tetrachloride, tetrachloroethylene, 1,2-dichloroethane, dieldrin, hexachlorocyclopentadiene, copper, lead, zinc, arsenic, and mercury were within or above their indicator levels in Trench CSO3 (Figure CS-SP-6d).

Hexachlorocyclopentadiene was detected in Borings 1, 2, 3, and 4 at 3,000 ug/g, 4,000 ug/g, 300 ug/g, and 2,000 ug/g, respectively. Boring 4 contained other organic compounds including carbon tetrachloride (3 ug/g), chloroform (2 ug/g), tetrachloroethylene (10 ug/g), 1,2-dichloroethane (40 ug/g), and dieldrin (1 ug/g). Carbon tetrachloride was detected at 9 ug/g in Boring 2, and tetrachloroethylene was detected at 3 ug/g in Borings 1 and 2.

Copper and zinc were within and above their indicator ranges in ten and twelve samples, respectively, with maximum concentrations of 46 and 100 ug/g, respectively. Lead was detected at 640 ug/g in Boring 1 and 150 ug/g in Boring 2. Arsenic was found within its indicator range in 5 samples. Mercury was found within its indicator range in 3 samples and above its indicator range (0.020 ug/g) in Boring 6.

In the GC/MS scan, many halogenated nontarget organic compounds were tentatively identified in Borings 1 through 6 at concentrations that ranged from 2 to 300 ug/g. The compounds included isomers or metabolites of aldrin and isodrin (Boring 4) and chlordene (Boring 2). Two alkenes were tentatively identified in Boring 7 at low concentrations (0.3 and 0.4 ppm).

Analysis of soil gradation (Figures CS-SP-5e, 5f, 5g, and 5h) shows the bedding material to consist of 10 to 20 percent coarse to medium sand and gravel, 30 to 60 percent fine sand, and 20 to 60 percent silt or clay, which indicates that native material was used for the pipe foundation. Calculations for the structural stability of the pipe (Appendix CS-C) under worst trench earth loading conditions and for poor Class D bedding in accordance with ASTM C12-82 (ASTM, 1986) show a marginal factor of safety, primarily due to the depth of backfill above the pipe. The safety factor combined with possibly inadequate compaction of the backfill material beneath the haunches of the pipe may explain the structural failure (the longitudinal cracking) of the pipe.

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Trench MKE 2

Samples were collected from beneath three pipe joints in Trench MKE 2 (Figure CS-SP-6e). These samples contained elevated levels of pesticides, herbicides, process intermediates, and metals. Semivolatile organic compounds detected in at least two of the three samples include dichlorodiphenyltrichloroethane (DDT) (7 to 30 ug/g), aldrin (100 ug/g in all three samples), atrazine (10 ug/g), dieldrin (10 to 70 ug/g), hexachlorocyclopentadiene (30 and 1 ug/g), isodrin (10 to 30 ug/g), parathion (20 ug/g), supona (30 and 30 ug/g), and dibromochloropropane (80 and 100 ug/g). A separate analysis for dibromochloropropane showed this compound to be present in all three borings at concentrations ranging from 370 to 32,000 ug/g. Parathion was detected in Boring 2 at 20 ug/g.

Cadmium, copper, lead, zinc, arsenic, and mercury were within or above their indicator ranges in all three borings. Concentrations of arsenic ranged from 130 to 190 ug/g, cadmium from 4.2 to 5.8 ug/g, copper from 55 to 1,500 ug/g, lead from 38 to 89 ug/g, zinc from 86 to 230 ug/g, and mercury from 0.7 to 4.7 ug/g.

Numerous nontarget hydrocarbons and halogenated organics were tentatively identified in each of the samples at concentrations ranging from 0.4 to 90 ppm and 0.4 to 2,000 ppm, respectively. Organophosphorous pesticides were tentatively identified from 2 to 70 ppm and an isomer of chlordene at 9 ppm in Boring 3.

Trench MKE 3

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Two samples were collected from Trench MKE 3 at locations directly underneath Joints 1 and 3 (Figure CS-SP-6f). Semivolatile compounds found in both samples included aldrin (100 and 100 ug/g), dibromochloropropane (70 and 9 ug/g), dieldrin (100 and 20 ug/g), isodrin (30 and 30 ug/g), and supona (4 and 2 ug/g). In addition, Boring 1 contained atrazine (4 ug/g), dichlorodiphenylethane (4 ug/g), and dichlorodiphenyltrichloroethane (30 ug/g). Dibromochloropropane was also detected in a separate analysis at 95 and 13 ug/g.

Results from the metals analysis showed that Boring 1 contained elevated levels of cadmium (3.1 ug/g), arsenic (150 ug/g), and mercury (0.58 ug/g).

Site CS-SP 0097U/0185A Boring 3 contained elevated levels of cadmium (2.8 ug/g), copper (75 ug/g), zinc (83 ug/g), and mercury (0.27 ug/g).

Numerous nontarget compounds were tentatively identified as hydrocarbons, chlorinated hydrocarbons, and chlorinated pesticides. The hydrocarbons primarily were branched, ranged in size from 11 to 19 carbons, and were present in concentrations from 3 to 30 ppm. The chlorinated hydrocarbons and pesticides included chlordene and isomers of dichlorodiphenyltrichloroethane (DDT) and dichlorodiphenyldichloroethane (DDD) and hexachlorobutadiene. Concentrations of these nontarget compounds ranged from 4 to 100 ppm.

Trench MKE 4

Trench MKE 4 yielded three samples that were collected from directly under Joints 1, 2 and 3 (Figure CS-SP-6g). Semivolatile analyses showed the presence of pesticides and halogenated hydrocarbons at concentrations up to 540 ug/g. Of interest are aldrin (20 and 20 ug/g), dibromochloropropane (20 to 200 ug/g), dichlorodiphenylethane (0.8 and 2 ug/g), dichlorodiphenyltrichloroethane (10 to 40 ug/g), dieldrin (2 to 30 ug/g), hexachlorocyclopentadiene (20 and 30 ug/g), isodrin (1 to 40 ug/g), and supona (20 and 2 ug/g). A separate analysis showed dibromochloropropane at 540, 70, and 60 ug/g.

Elevated levels of arsenic were found in all three borings at concentrations from 120 to 170 ug/g. Cadmium, copper, zinc, and mercury were all present at concentrations within or above their indicator ranges. Maximum concentrations were 7.7 ug/g for cadmium, 42 ug/g for copper, 2.2 ug/g for mercury, and 100 ug/g for zinc.

Many nontarget halogenated organics, hydrocarbons, and aromatics were tentatively identified in each of the samples at concentrations ranging from 0.4 to 80 ppm. Of particular interest are compounds tentatively identified as isomers of isodrin (1, 2, and 5 ppm), dichlorodiphenyltrichloroethane (DDT) (4 and 20 ppm), aldrin (1, 2, and 300 ppm), dieldrin (9 ppm), and chlordene (0.6 to 40 ppm).

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Trench MKE 6

Three samples were recovered from Trench MKE 6, all collected from beneath joints in the pipe (Figure CS-SP-6h). Semivolatile organic analysis revealed elevated levels of pesticides and halogenated hydrocarbons in the samples, including aldrin (200, 300, and 600 ug/g), dibromochloropropane (50 to 300 ug/g), dichlorodiphenylethane (7 ug/g), dieldrin (40 and 10 ug/g), isodrin (20, 20 and 40 ug/g), and supona (8 ug/g). Dibromochloropropane was found at 440, 260, and 55 ug/g in a separate analysis.

Elevated levels of arsenic were found in all three borings at concentrations of 740, 600, and 250 ug/g. Cadmium, copper, lead, zinc, arsenic, and mercury were all present at concentrations above their indicator ranges. Maximum concentrations were 34 ug/g for cadmium, 150 ug/g for copper, 97 ug/g for lead, 480 ug/g for zinc, 740 ug/g for arsenic, and 8.6 ug/g for mercury.

Nontarget compounds included those tentatively identified as hydrocarbons, ranging in size from 10 to 26 carbons, pesticides and their isomers, and brominated hydrocarbons. Maximum values are 300 ppm for methyl ester, 200 ppm for the brominated hydrocarbon, 100 ppm for the hydrocarbons, 700 for chlordene, and 80 for an isomer of dichlorodiphenyltrichloroethane (DDT). Aldrin, isodrin and an isomer of dieldrin were also tentatively identified at maximum concentrations of 2, 30, and 6 ppm, respectively.

Trench MKE 7

Three samples were collected from beneath joints in Trench MKE 7 (Figure CS-SP-6i). No target analytes were detected within or above their indicator levels in any of the samples. One nontarget compound, tentatively identified as bis(2-ethylhexyl)phthalate, was detected in Boring 1 at a low concentration (0.5 ppm).

Trench MKE 19

Three samples were collected in Trench MKE 19 (Figure CS-SP-6j), and several metals were detected within or above their indicator ranges in all samples. Concentrations ranged from 41 to 71 ug/g for copper, 85 to 97 ug/g for zinc,

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5.1 to 14 ug/g for arsenic, and 0.18 to 5.4 ug/g for mercury. No nontarget compounds of note were detected.

Trench MKE 20

In Trench MKE 20 (Figure CS-SP-6k) three samples were collected from beneath pipe joints. Aldrin, dibromochloropropane, and dieldrin were each detected in one sample at 0.6, 0.6, and 0.3 ug/g, respectively. Copper, lead, and zinc were within or above their indicator ranges in all three samples. Concentrations ranged from 32 to 80 ug/g for copper, 29 to 56 ug/g for lead, and 150 to 760 ug/g for zinc. Arsenic was within its indicator range in Borings 1 and 3 at 4.4 and 3.4 ug/g, and mercury was found above its indicator range at 0.17 and 0.13 ug/g in the same borings.

Several nontarget compounds were tentatively identified in borings from Trench MKE 20. Trichlorobenzamine was found in Borings 1 and 3 at 5 ppm and 10 ppm, respectively, and a branched hydrocarbon was tentatively identified at low concentrations in the same borings.

Trench MKE 21

Two samples were collected from Trench MKE 21 (Figure CS-SP-61). Lead and zinc were detected within their indicator ranges in Boring 1 at 28 ug/g and 68 ug/g, respectively. No nontarget compounds of note were detected in this trench.

3.2.5 Contamination Assessment

The chemical sewer in the South Plants manufacturing complex was installed to carry liquid chemical wastes from the manufacturing areas to the waste disposal basins. Therefore, this portion of the chemical sewer was exposed to large quantities of chemicals manufactured and used in the South Plants manufacturing complex. The system was constructed primarily with oakum cement joints, which were not designed to be water tight, and some leakage is to be expected; however, as the sewer line deteriorated with age, considerable exfiltration may have occurred. In samples from manholes and trenches along

the chemical sewer in South Plants the following compounds were detected within or above their indicator levels:

1,2-Dichloroethane

1,1,1-Trichloroethane

1,1,2-Trichloroethane

Benzene

Bicycloheptadiene
Carbon tetrachloride

Chloroform

Ethylbenzene

m-Xylene

Methylene chloride

Methylisobutyl ketone

o- and p-Xylene

Tetrachloroethylene

Toluene

Trichloroethylene

Aldrin

Atrazine

Chlorophenylmethyl sulfone

Chlorobenzene

Dichlorodiphenylethane

Dichlorodiphenyltrichloroethane

Dieldrin

Hexachlorocyclopentadiene

Isodrin

Parathion

Supona

Dibromochloropropane

Dicyclopentadiene

Cadmium

Chromium

Copper

Lead

Zinc

Arsenic

Mercury

Thiodiglycol

Chloroacetic Acid

Several hundred nontarget compounds were tentatively identified. These are not listed separately here but have been grouped into four main categories: halogenated hydrocarbons, nonhalogenated hydrocarbons, organophosphorous compounds, and naturally occurring compounds.

The following discussion begins at the farthest upstream location and follows the sewer in the direction of flow. Because of the wide variety and high concentrations of compounds detected, this contamination assessment will be used to indicate potential contaminant migration patterns around the sewer lines. The trench study areas provided an indication of the horizontal and vertical gradients of potential contaminants. Data collected from beneath

manholes will be used to verify the vertical extent of potential contaminant migration. As data collected from the MKE trenches by both MKE and Ebasco are limited to a maximum depth of 3 ft below the pipe, these data will be used to support other data and to correlate areas where potential contamination can be expected.

Trench MKE 19

Trench MKE 19 was dug along an abandoned portion of the chemical sewer. It is located at the far upstream end of the sewer line that extends toward the aldrin area, although at this point its only connection was to the mustard and dichlor decontamination pit. No semivolatile target compounds were detected in any of the three Ebasco samples collected at this excavation. Each sample contained copper, zinc, arsenic, and mercury at levels above their indicator ranges. No nontarget compounds of note were detected.

Samples collected from Trench MKE 19 by MKE contained elevated levels of methylene chloride, arsenic, and mercury. The methylene chloride was present in a fairly narrow concentration range (2.7 to 4.1 ug/g) and appeared in all samples, which may be an indication of laboratory background. The elevated levels of arsenic, and particularly mercury, were much higher directly under the pipe than beside the pipe. The Ebasco samples from this trench did not show the mercury to be present at levels quite as high as the MKE samples (a maximum value of 5.4 ug/g versus a maximum value of 25 ug/g), although in both cases the mercury concentration was above natural levels expected in these soils. There are no known documented mercury spills in this area (Ebasco, 1988c). It appears from the higher concentrations under the pipe that the arsenic and mercury originated from the sewers. The elevated levels of copper and zinc may also have originated from the chemical sewer, but because MKE did not analyze for these metals, no data are available to indicate concentration gradients.

Manhole W27

Manhole W27 is located downstream of Trench MKE 19 and received wastes from the mustard, aldrin, and dibromochloropropane production areas and a mustard

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and pesticide decontamination pit. Seventeen volatile and semivolatile compounds were detected in the first three sampling intervals (6.5-7.5, 11.5-12.5, and 16.2-17.2 ft). Concentrations of note are aldrin at 100 ug/g in the 6.5 to 7.5 and 16.2 to 17.2 ft intervals (the first and third sampling intervals under the manhole) and dibromochloropropane at 200 and 400 ug/g in the 11.5 to 12.5 and 16.2 to 17.2 ft intervals, respectively. Bicycloheptadiene, an intermediate in the production of aldrin and dieldrin, was also detected in the samples from this manhole, although never above 30 ug/g. The concentrations of volatile and semivolatile organic compounds decreased at lower depths indicating that the chemical sewer may be the source of these compounds. The two deepest intervals contained only eight volatile and semivolatile target compounds ranging in concentration from 1 to 30 ug/g. Chromium, copper, lead, zinc, and mercury were present at elevated levels in the upper three samples. Only copper and zinc were above their indicator ranges in the lower two samples. Samples taken by MKE also showed elevated levels of copper, lead, and zinc in the uppermost sample.

This distribution of detectable compounds probably is due to the geology of the area. The first two samples were taken in weathered sandstone. The third sample, taken at a depth of 16.2 to 17.2 ft, was in a transition region to less fractured rock, and the following two samples came from progressively less fractured material. The decreasing amount of fractured material is less permeable than more fractured rock, causing less downward migration of chemicals from the chemical sewer.

Many nontarget halogenated and nonhalogenated hydrocarbons were tentatively identified, ranging in concentration from 30 ppm to less than 1 ppm. The concentrations and numbers of nontarget compounds detected followed the same distribution as the target compounds. Increasing depth corresponded to decreasing levels and numbers of compounds present.

Samples were collected near Manhole W27 during the Task 2 investigation of Shell spill sites (Ebasco, 1987a). Elevated levels of aldrin (1,000 and 2,000 ug/g) and dieldrin (100 and 400 ug/g) were detected in the surface

samples but not in samples taken at the 4 to 5 and 9 to 10 ft intervals. These data indicated that downward migration of target analytes from the surface had not penetrated to the depth of the sewers or below the sewers.

Trench CS02

Trench CSO2 is located along the section of pipe 121 ft downstream of Manhole W27. Groundwater is high in this area, within about 2 ft of the sewer, and samples taken from the second interval beneath the pipe (11.8 to 12.8 ft) were wet. High levels of pesticides and solvents were detected in all intervals of all of the borings, whether directly under the pipe or up to 5 ft away. Most notably, aldrin was detected in all ten samples, three times at 20,000 ug/g and once at 40,000 ug/g. Dibromochloropropane was also detected at concentrations as high as 7,000 ug/g. Concentrations of chemicals did not taper off with increasing depth. The highest levels of both aldrin and dibromochloropropane were detected in Boring 7 in the saturated sample.

Numerous nontarget compounds were detected at this site. Nearly all of them were tentatively identified as either halogenated or nonhalogenated hydrocarbons. The highest concentrations were detected in Boring 7, where the maximum level was 700 ppm.

Because all of the borings in Trench CSO2 contained significant amounts of target compounds, the extent of contaminant migration could not be determined from these data alone. A similar trench, SSO4, was dug around the sanitary sewer about 20 ft west of Trench CSO2. Results from this trench, which are included in the Sanitary Sewer - South Plants Contamination Assessment Report, showed very low levels of pesticides and metals near the pipe and nothing in saturated soils (Ebasco, 1988a). The high levels of potential contamination present in the soils under the chemical sewer, and not in soils near the sanitary sewer, indicate that the chemical sewer is the source of the potential contamination in this area.

Trench MKE 2

Trench MKE 2 is located downstream of Trench CS02, along the section of pipe

that received wastes from the white phosphorous storage and filling building and the pesticide drum filling building, in addition to those previously mentioned. Analysis of Ebasco samples showed elevated levels of pesticides, herbicides, process intermediates, and metals, with aldrin at 100 ug/g, dibromochloropropane at 32,000 ug/g, copper at 1,500 ug/g, and arsenic at 190 ug/g.

MKE data from this trench also showed high levels of these compounds, most notably aldrin at 14,000 ug/g, dibromochloropropane at 7,500 ug/g, and arsenic at 520 ug/g. These samples were analyzed for volatile organic compounds and showed the presence of solvents such as carbon tetrachloride, chlorobenzene, chloroform, methylene chloride, tetrachloroethylene, and toluene, but at concentrations that did not exceed 29 ug/g.

Nontarget compound data showed numerous halogenated and nonhalogenated hydrocarbons similar to those found in Trench CS02.

All samples collected from this trench were taken directly under the pipe or from immediately beside the pipe; none were from deeper intervals or from any distance away from the pipe. Therefore, no evidence of concentration gradients with respect to distance from the pipe could be identified. However, the types of compounds detected and the concentrations at which they were found corroborate the data from Trench CSO2, which was directly upstream of this trench. It appears that the chemical sewer may be the source of these compounds.

Manhole W25

Manhole W25 is the manhole directly downstream of Trench MKE 2. Samples from directly under the channel, in the 6.9 to 7.9 ft interval of this boring, contained high levels of pesticides, including aldrin at 10,000 ug/g, dibromochloropropane at 10,000 ug/g, and isodrin at 300 ug/g. Solvents were also present, with toluene having the highest concentration at 300 ug/g. Mercury and arsenic were also present at elevated levels. Concentrations of target compounds dropped off dramatically with increasing depth, as was the

case in Manhole W27. A similar trend was not seen in Trench CSO2, located between these two manholes, because of the very high water table under the treach. Sampling stopped when the water table was reached; therefore, only two intervals were sampled under Trench CSO2, compared with five intervals beneath Manholes W25 and W27. A summary of groundwater depths and sewer depths is included in Table CS-SP-2. In the 16.2 to 17.2 and 21.1 to 22.1 ft intervals, copper and zinc were the only target compounds above indicator level, and both were slightly above their indicator ranges. The last interval, 26.2 to 27.2 ft, was taken in groundwater and contained 1 ug/g of chloroform as well as copper and zinc within their indicator ranges. The presence of this chloroform is due more likely to a groundwater plume than from downward migration from the chemical sewer system.

Nontarget compounds were detected in much higher concentrations in the uppermost sample than in deeper samples, as were the target compounds. Halogenated hydrocarbons were tentatively identified at concentrations ranging from 900 to 4 ppm, and a tentatively identified benzene was found at 300 ppm. The next interval contained only three tentatively identified halogenated hydrocarbons at a maximum concentration of 40 ppm, and the next three intervals did not contain any nontarget compounds of note.

Samples taken from beneath this manhole by MKE showed a similar trend. Concentrations of pesticides such as aldrin, dibromochloropropane, and isodrin were much higher in the 7.4 ft interval than in the 14.5 ft interval. Maximum values were 7,000 ug/g for aldrin, 6,000 ug/g for dibromochloropropane, and 200 ug/g for isodrin.

The contaminant concentration gradient evident beneath this manhole and the similarity of this manhole and Manhole W27 imply that the chemical sewer is the most likely source of the potential contamination.

Trenches MKE 3. MKE 4. and MKE 6

This series of trenches was dug along the portion of the chemical sewer directly downstream of Trench CSO2, which collected wastes from pesticide and

Army agent manufacturing facilities, the white phosphorous and arsenic trichloride tank house, and the Army laboratory and laundry. Elevated levels of pesticides, herbicides, process intermediates, and metals were found in samples taken by Ebasco from these trenches. Most notable were aldrin at 600 ug/g and dibromochloropropane at 540 ug/g. Of the metals, copper was found at 150 ug/g, zinc at 480 ug/g, and arsenic at 740 ug/g. These trenches run past the arsenic silos, which may be the source of the arsenic.

MKE data taken from these trenches also showed high concentrations of pesticides and arsenic. Aldrin was found in three samples at 20,000 ug/g, dibromochloropropane was detected as high as 510 ug/g, and arsenic also had a maximum value of 510 ug/g. It does not appear that samples taken from directly under the pipe contain target compounds at higher concentrations than samples taken from beside the pipe.

Nontarget compound data contained numerous tentatively identified halogenated and nonhalogenated hydrocarbons similar to those found in Trench CS02.

Samples were taken only from directly under and beside the pipe in these trenches, never at deeper intervals or at any distance away from the pipe. Therefore, no obvious trends regarding contaminant migration could be identified from these data. However, the types of compounds detected and the levels at which they were found corroborate the data from Trench CSO2, which was a short distance upstream of these trenches.

Trench MKE 20

Trench MKE 20 is located one manhole upstream of Trench CS01, and both are along a branch of the sewer that joins the main line at Manhole W22. Ebasco collected three samples from directly under the pipe, and analysis showed elevated levels of aldrin, dieldrin, dibromochloropropane, copper, lead, zinc, and mercury. The nontarget analysis tentatively identified two chlorinated hydrocarbons in the samples containing aldrin and dieldrin.

Analysis of MKE data showed concentrations of methylene chloride ranging from 2.3 to 2.9 ug/g, which again may be due to laboratory background. The only other target compound above its indicator level was mercury at 1.5 ug/g, found in the sample from directly under the pipe.

Considering the limited amount of data available, it is possible that the target compounds detected in this trench originated from the chemical sewer.

Trench CS01

Trench CSO1 is located along a section of the chemical sewer lin: that collected wastes from pesticide and Army agent manufacturing facilities and from the Army laboratory and laundry. Semivolatile and volatile organic compounds, ICP metals, arsenic, and mercury were noted in borings from this trench.

Concentrations of the organic compounds and metals decrease with distance from the pipe both horizontally and vertically, with organic compounds absent entirely in the lower three sampling intervals. Aldrin, dieldrin, tetrachloroethylene, and methylene chloride were found in samples taken from directly below the pipe. Boring 8, 1 ft away from the pipe, contained only tetrachloroethylene in the 8 to 9 ft interval; Boring 9, 5 ft away from the pipe, did not contain any volatile or semivolatile target compounds. Metals, most notably zinc and arsenic, were also present at elevated levels near the pipe. Samples taken by MKE from directly under the pipe showed elevated levels of mercury zinc. Boring 9 contained no arsenic and only slightly elevated levels of zinc and copper. This boring penetrated claystone, so higher levels of zinc and copper are to be expected based on the natural levels found in these materials at RMA.

In addition, a composite grab sample was collected of yellow material that was found on several joints along the exposed pipe. This sample contained elevated levels of dieldrin, chromium, zinc, arsenic, and mercury. The yellow color may have been due to the presence of chromate ions, a chromium specie characterized by a bright yellow color.

Nontarget compounds tentatively identified at this location were primarily halogenated hydrocarbons ranging in concentration from 20 to 0.4 ppm, except in the grab sample where the concentration rose to 40 to 20 ppm. Other tentatively identified compounds included unidentified phthalates and organophosphorus substances. Again, the concentrations of compounds detected decreased with distance from the pipe.

The observed concentration gradients around the pipe suggest that the target and nontarget compounds originated from the chemical sewer.

Manhole W21

Manhole W21 is the second manhole downstream of Trench CS01 and MKE Trenches 2, 3, and 4. Volatile and semivolatile organic compounds are prevalent down to and including the 17.0 to 18.0 ft interval, 10 ft below the pipe and 10 ft above the water table. Some concentrations of note were dibromochloropropane at 800 ug/g and arsenic at 300 ug/g in the 8.0 to 9.0 ft interval, arsenic at 430 ug/g in the 10.5 ft interval (MKE sample) and aldrin at 100 ug/g in the 17.0 to 18.0 ft interval. No compounds exceeded 100 ug/g in the 12.0 to 13.0 ft interval. In general, concentrations of compounds detected in the 22.0 to 23.0 and 27.0 to 28.0 ft intervals are considerably lower than those found at shallower depths.

This distribution of contaminants probably is due to the geology of the area. Weathered claystone overlies less permeable siltstone. The transition between these two units occurs approximately at the 17.0 to 18.0 ft interval where there appears to be a buildup of some, but not all, of the target compounds. These include carbon tetrachloride, tetrachloroethylene, bicycloheptadiene, chlorobenzene, aldrin, isodrin, parathion, and supona. Chemicals released from the chemical sewer have migrated downward through the weathered claystone but have been slowed by the siltstone.

The sample taken from the 27.0 to 28.0 ft interval was wet, and therefore was in contact with groundwater. This sample contained aldrin at 10 ug/g and some solvents ranging in concentration from 0.5 to 7 ug/g. These compounds were

not found in the 22.0 to 23.0 ft interval, except chloroform, and are probably due to groundwater plumes rather than downward migration from the sewer.

The tentative identification of nontarget compounds showed the presence of several halogenated and nonhalogenated hydrocarbons as well as a small amount of an organophosphorus compound. In general, these followed the same distribution as the target compounds. Most of the compounds appeared in the first three intervals, with the exception of an isomer of aldrin. This isomer was found in the 27.0 to 28.0 ft interval at a concentration of 100 ppm.

It appears that target and nontarget compounds detected in this boring, except for the solvents found beneath the water table originated from the chemical sewer.

Trench MKE 21

Trench MKE 21 is located along a section of the chemical sewer upstream of Manhole 6-1, which collected wastewater from the Army laboratory and laundry. This section was part of the nontoxic sewer servicing the chlorine plant just west of "D" Street and was connnected to the chemical sewer in 1956. No semivolatile compounds were found in either of the two samples taken from beneath the pipe. Lead and zinc were both present within their indicator ranges. No nontarget compounds of note were detected.

Samples collected from this trench by MKE showed no evidence of semivolatile organic compounds, arsenic, or mercury. Methylene chloride was detected in three of the samples at concentrations consistent with those found in other samples. This consistency and prevalence may be taken as an indication of laboratory background contamination.

Manhole 6-1

Manhole 6-1 is also located in the chlorine plant area along a part of the chemical sewer line that is downstream of Trench MKE 21. The upper sample from this manhole did not contain any volatile or semivolatile target compounds. The second sampling interval contained only 1,1,2-trichloroethane

at 0.8 ug/g. The solvents 1,1,1-trichloroethane, carbon tetrachloride, and tetrachloroethylene were detected at 1 ug/g or less in the 23.5 to 24.5 ft interval, slightly above the water table (26 ft). The presence of these compounds is probably related to groundwater plumes. Copper and zinc were also slightly above their indicator ranges in several of the samples. Soils from these samples had a clay component, so the slightly elevated levels of metals can be expected.

Trench CS03

Trench CS03 is located in the chlorine plant area. The most notable target analyte found at this site was hexachlorocyclopentadiene, an intermediate in the production of aldrin and dieldrin. This compound was found in borings from directly under the pipe at levels of 300 ug/g, 2,000 ug/g, 3,000 ug/g, and 4,000 ug/g. Some solvents were also present, but not at concentrations above 40 ug/g. Lead was found at levels of 640 and 150 ug/g in two of the borings. The highest levels of target analytes were detected in unconsolidated material found directly under the pipe. The concentrations of chemicals decrease with depth and distance from the pipe. Samples taken 1 and 5 ft away from the pipe and at depths below the pipe contain only copper and zinc within or slightly above their indicator ranges, with occasional occurrences of arsenic and mercury within or above their indicator ranges. Soils under this trench have a clay component and therefore the slightly elevated levels of copper and zinc can be expected.

Numerous halogenated hydrocarbons were tentatively identified in the nontarget GC/MS analysis. All were present in samples taken from directly under the pipe. No compounds of note were found in samples taken away from the pipe or farther below the pipe.

In addition, one sample was taken from along the top of the pipe where a crack had leaked dye during the field work. The only target compound found in this sample was arsenic, which was within its indicator range. A tentatively identified compound containing 3 chlorines was detected in this sample at 2 ppm in the GC/MS analysis.

The concentration gradients of target and nontarget analytes around the pipe implies that these compounds originated from the chemical sewer.

Manhole 4-3

This manhole is located along the western edge of the chlorine plant area and, like Manhole 6-1 and the sewer in Trenches CSO3 and MKE 21, it was originally part of the nontoxic contaminated waste line. Samples from this manhole contained methylene chloride at 1 ug/g in the first three intervals, trichloroethylene at 0.6 ug/g in the second interval, and aldrin at 2 ug/g in the first interval. Samples taken by MKE also showed aldrin in the first sampling interval at a concentration of 1.0 ug/g. Zinc was found at 82 ug/g, slightly above its indicator range, in soil having a clay component, where an elevated concentration may be expected. Two nontarget compounds of note were tentatively identified as bromodichloromethane, found at 9 ppm, and an alkylated phenol, found at 0.4 ppm, both in the fourth sampling interval (17.2 to 18.2 ft).

The compounds detected in samples from this manhole do not exhibit obvious trends of decreasing concentration with distance from the pipe, with the possible exception of aldrin. Although compounds of this sort were not anticipated in this area, and unless other data become available, it will be assumed that these compounds originated from the chemical sewer.

Trench MKE 7

Trench MKE 7 was dug along an abondoned portion of the chemical sewer in Section 35. This line was originally intended to carry caustic waste from the chlorine plant area to an impermeable basin, but it was never used for that purpose (CWS, 1945a; CWS, 1945b; Donnelly, undated). No target analytes were detected within or above their indicator levels in the Ebasco samples from this trench. One nontarget compound was detected at a low concentration (0.5 ppm) and was tentatively identified as a phthalate, a plasticizer ubiquitous in the environment at RMA.

Results of the MKE sampling program showed methylene chlorine in four of the eight samples at concentrations ranging from 2.4 to 12 ug/g. Methylene chloride is a common laboratory solvent and its presence here may be an indication of laboratory contamination. Arsenic was the only other target analyte detected, and was found in the three uppermost samples at concentrations of 18, 18, and 21 ug/g. These samples were all taken from soils with a clay component, which may account for the elevated levels of arsenic.

Nontarget compounds detected in the MKE samples included those tentatively identified as phthalates, alcohols, acids, esters, and three instances of a substituted alkene. The phthalates are plasticizers, which are prevalent in the environment at RMA and which were present in low concentrations, the maximum being 8.9 ug/g. Alcohols, esters, and hexadecanoic acid are often associated with naturally occurring compounds and were present in concentrations of up to 36 ug/g. The three substituted alkenes were present at concentrations of 9.8, 0.5, and 5.1 ug/g. Compounds of this nature were not anticipated in this area.

Data from the Ebasco sampling program showed no target compounds or nontarget compounds of note, while the MKE sampling program tentatively identified some hydrocarbons in the nontarget analysis. All available documentation regarding this part of the sewer line states that it was never used. It is therefore unlikely that any potential contamination detected in the trench originated from the sewer line.

3.3 FOLLOW-ON SURVEY

The nature and extent of potential contamination associated with the South Plants chamical sewer has been defined so that a worst-case estimate can be made of the quantity of potentially contaminated soil. Therefore, no follow-on investigations are recommended for the chemical sewer system in the South Plants area.

3.4 QUANTITY OF POTENTIALLY CONTAMINATED SOIL

Based on the results of the field program, the estimated volume of potentially contaminated soil, rounded to two significant figures, is 120,000 cubic yards (yd³) with an estimated overburden of 120,000 yd³.

The South Plants chemical sewer system will be divided into two parts: the portion in Section 2 that was originally the nontoxic waste system and the portion in Section 1 that serviced the main manufacturing area.

In Section 2, samples from Trench CS03 contained potential contamination directly below the pipe and up to 1 ft away from the pipe. Samples 5 ft away from the pipe and 5 ft below the pipe did not contain compounds at levels considered to be potentially contaminated. Trench MKE 21 did not contain any analytes above their indicator levels. Manhole 4-3 showed elevated levels of target analytes in the first three sampling intervals but not in the fourth, 15 ft below the manhole. Manhole 6-1 contained elevated levels of solvents in the 23.5 to 24.5 ft interval, which have been attributed to groundwater plumes. Shallower samples did not contain target analytes at levels considered to be potentially contaminated.

The depth of potential contamination will be assumed to extend 15 ft below the pipe (based on Manhole 4-3) and 5 ft on either side of the pipe (based on Trench CSO3). The volume of potentially contaminated soil will be estimated by assuming a width of 11.5 ft, which includes 5 ft on each side of the pipe and the maximum pipe diameter of 18 in, and by assuming a depth of 16.5 ft, which includes the maximum pipe diameter and 15 ft beneath the pipe. The pipe length includes all pipe west of Manhole 6-4.

Estimated Volume of Potentially Contaminated Soil:

Length = 5,300 ft
Depth = 16.5 ft
Width = 11.5 ft
Volume = 37,000 yd³

Estimated Volume of Overburden:

Length = 5,300 ft

Average depth to pipe = 10 ft

Width = 11.5 ft

Volume = 23,000 yd³

Samples collected in Section 1 showed potential contamination along the chemical sewer pipe and at depth beneath the pipe. Therefore, the entire chemical sewer line in Section 1 is assumed to be potentially contaminated, with the exception of the overhead line originating in the hydrazine facility and the line connecting Manholes A, B, and C from Building 732, which was never used.

The approximate length of this portion of the sewer line is 18,000 ft. The soil is assumed to be potentially contaminated from the top of the pipe to the water table. The maximum pipe diameter is 12 in, and the average distance from the pipe to the water table is 5 ft; therefore, the depth used for the calculation is 6 ft. Samples collected 5 ft away from the pipe contained detectable analytes at concentrations that decreased with distance away from the pipe. Therefore, the width of potentially contaminated soil is assumed to extend 10 ft on each side of the pipe, giving a total width including the pipe diameter of 21 ft.

Estimated Volume of Potentially Contaminated Soil:

Length = 18,000 ft

Depth = 6 ft

Width = 21 ft

Volume = 84,000 yd³

Estimated Volume of Overburden:

Length = 18,000 ft Average depth

to pipe = 7 ft
Width = 21 ft
Volume = 98,000 yd³

Results from the field survey were used to generate a most conservative (worst-case) estimate of the volume of potentially contaminated soil along the chemical sewer in South Plants. This delineation of the boundaries of potential contamination should not be construed to indicate the actual presence of contamination within the volumes outlined. In addition, this approach is not intended to imply that any or all of the soil within the potentially contaminated volume must be remediated, nor does it make any assumption about the type of remediation that may be required. Rather, this approach is intended to provide preliminary estimates of the maximum possible volume of contaminated materials for planning purposes only.

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Appendix CS-A

Chemical Names and Abbreviations

APPENDIX CS-A Chemical Names and Abbreviations

Analytic Methods	Abbreviations
Atomic Absorption Spectroscopy	AA
Gas Chromatography/Conductivity Detector	GCCON
Gas Chromatography/Electron Capture Detector	GCECD
Gas Chromatography/Flame Ionization Detector	GCFID
Gas Chromatography/Flame Photometric Detector	GCFPD
Gas Chromatography/Mass Spectrometry	CCMS
Gas Chromatography/Nitrogen Phosphorous Detector	GCNPD
Gas Chromatography/Photoionization Detector	GCPID
High Performance Liquid Chromatography	HPLC
Inductive Coupled Argon Plasma Screen	ICP
Ion Chromatography	IONCHROM
Spectraphotometry	SPECT
2D6Cflydiofonc ff 2	

PHASE I ANALYTES AND CERTIFIED METHODS SOIL SAMPLES

Analysis/Methods/Analytes	Synonymous Names Used in Appendix B	Abbreviations
AGENT PRODUCTS/HPLC		TDG
Chloroacetic acid	Chloroacetic acid	CLC2A
Thiodiglycol	Thiodiglycol (TDG)	TDGCL
AGENT PRODUCTS/IONCHROM		<u>GBDP</u>
Isopropylmethylphosphonic acid	Isopropylmethylphosphonate	IMPA
ANIONS/IONCHROM		<u>ANIONS</u>
Chloride	Chloride	CL
Fluoride	Fluoride	FL
Sulfate	Sulfate	S04
ARSENIC/AA	Arsenic	AS
DIBROMOCHLOROPROPANE/GCECD	Dibromochloropropane	DBCP
HYDRAZINES/SPECT		HYD
Hydrazine	Hydrazine	HYDRZ
Methylhydrazine	Methylhydrazine	MHYDRZ
Unsymmetrical dimethyl	Unsymmetrical dimethyl	
hydrazine	hydrazine	UDMH
MERCURY/AA	Mercury	HG

APPENDIX CS-A (Continued) Phase I

Analysis/Methods/Analytes	Synonymous Names Used in Appendix B	Abbreviations
METALS/ICP		ICP
Cadmium	Cadmium	CD
Chromium	Chromium	CR
Copper	Copper	CU
Lead	Lead	PB
Zinc	Zinc	ZN
ORGANONITROGEN COMPOUNDS/GCNPD		ONC
n-Nitrosodimethylamine	n-Nitrosodimethylamine	NNDMEA
n-Nitrosodi-n-propylamine	n-Nitrosodi-n-propylamine	NNDNPA
ORGANOPHOSPHOROUS COMPOUNDS/GCFPD		OPC
Diisopropylmethyl phosphonate	Diisopropylmethyl phosphonate	DIMP
Dimethylmethyl phosphonate	Dimethylmethyl phosphate	DMMP
SEMIVOLATILE ORGANIC COMPOUNDS/		
GCMS		SVO
1,4-0xathiane	1,4-0xathiane	TAXO
2,2-bis(Para-chlorophenyl)-	Dichlorodiphenylethane	PPDDE
1,1-dichloroethane	•	
2,2-bis(Para-chlorophenyl)-	Dichlorodiphenyltrichloro-	PPDDT
1,1-1-trichloroethane	ethane	
Aldrin	Aldrin	ALDRN
Atrazine	Atrazine	ATZ
Chlordane	Chlordane	CLDAN
Chlorophenylmethyl sulfide	p-Chlorophenylmethyl sulfide	CPMS
Chlorophenylmethyl sulfone	p-Chlorophenylmethyl sulfone	CPMS02
Chlorophenylmethyl sulfoxide	p-Chlorophenylmethyl sulfoxide	CPMSO
Dibromochloropropane	Dibromochloropropane	DBCP
Dicylopentadiene	Dicyclopentadiene	DCPD
Dieldrin	Dieldrin	DLDRN
Diisopropylmethyl phosphonate	Diisopropylmethyl phosphonate	DIMP
Dimethylmethyl phosphonate	Dimethylmethyl phosphonate	DMMP*
Dithiane	Dithiane	DITH
Endrin	Endrin	ENDRN
Hexachlorocyclopentadiene	Hexachlorocyclopentadiene	CL6CP
Isodrin	Isodrin	isodr
Malathion	Malathion	MLTHN
Parathion	Parathion	PRTHN
Supona	2-Chloro-1 (2,4-dichloropheny1) vinyldiethyl phosphates	SUPONA
Vapona	Vapona	DDVP

^{*} DMMP is certified as part of the semivolatile organic compound method only for Hittman-Ebasco Laboratory.

APPENDIX CS-A (Continued) Phase I

Analysis/Methods/Analytes	Synonymous Names Used in Appendix B	Abbreviations
VOLATILE ORGANIC COMPOUNDS/ GCMS 1,1-Dichloroethane 1,2-Dichloroethane 1,1,1-Trichloroethane 1,1,2-Trichloroethane Benzene Bicycloheptadiene Carbon tetrachloride Chloroform Dibromochloropropane Dicyclopentadiene Dimethyldisulfide Ethylbenzene m-Xylene Methylene chloride Methylisobutyl k@tone o- and p-Xylene Tetrachloroethylene Toluene Trans-1,2-dichloroethylene	1,1-Dichloroethane 1,2-Dichloroethane 1,1,1-Trichloroethane 1,1,2-Trichloroethane Benzene Bicycloheptadiene Carbon tetrachloride Chlorobenzene Chloroform Dibromochloropropane Dicyclopentadiene Dimethyldisulfide Ethylbenzene m-Xylene Methylene chloride Methylisobutyl ketone Ortho- & Para-xylene Tetrachloroethene Toluene Trans-1,2-dichloroethene	VO 11DCLE 12DCLE 111TCE 112TCE C6H6 BCHPD CCL4 CLC6H5 CHCL3 DBCP DCPD DMDS ETC6H5 13DMB CH2CL2 MIBK XYLEN TCLEE MEC6H5 12DCE
Trichloroethylene	Trichloroethene	TRCLE

APPENDIX CS-A Phase II

PHASE II ANALYTES AND CERTIFIED METHODS SOIL SAMPLES

	Synonymous Names Used	
Analysis/Methods/Analytes	in Appendix B	Abbreviations
AGENT PRODUCTS/HPLC (Same as Phase I)		TDG
AGENT PRODUCTS/IONCHROM (Same as Phase I)		GBDP
ANIONS/IONCHROM (Same as Phase I)		ANIONS
ARSENIC/AA	Arsenic	AS
DIBROMOCHLOROPROPANE/GC	Dibromochloropropane	DBCP
HYDRAZINES/SPECT (Same as Phase I)		HYD
MERCURY/AA	Mercury	HG
METALS/ICP (Same as Phase I)		ICP
ORGANOCHLORINE PESTICIDES/GCECD		OCP
2,2-bis(Para-chlorophenyl)- 1,1-dichloroethane	Dichlorodiphenylethane	PPDDE
2,2-bis(Para-chlorophenyl)- 1,1-1-trichloroethane	Dichlorodiphenyltrichloro- ethane	PPDDT
Aldrin	Aldrin	ALDRN
Chlordane	Chlordane	CLDAN
Dieldrin	Dieldrin	DLDRN
Endrin	Endrin	ENDRN
Hexachlorocyclopentadiene Isodrin	Hexachlorocyclopentadiene Isodrin	CL6CP ISODR
Isodrin	Isodrin	13000
ORGANONITROGEN COMPOUNDS/GCNPD (Same as Phase I)		ONC
ORGANOPHOSPHOROUS COMPOUNDS/GCFPD (Same as Phase I)	!	<u>opc</u>

APPENDIX CS-A (Continued) Phase II

Analysis/Methods/Analytes	Synonymous Names Used in Appendix B	Abbreviations
ORGANOPHOSPHORUS PESTICIDES/		
GCNPD		OPP
Atrazine	Atrazine	ATZ
Malathion	Malathion	MLTHN
Parathion	Parathion	PRTHN
Supona	2-Chloro-1 (2,4-dichlorophenyl) vinyldiethyl phosphates	SUPONA
Vapona	Vapona	DDVP
ORGANOSULPHUR COMPOUNDS/GCFPD		QSC
1,4-0xathiane	1,4-0xathiane	TAXO
Chlorophenylmethyl sulfide	p-Chlorophenylmethyl sulfide	CPMS
Chlorophenylmethyl sulfone	p-Chlorophenylmethyl sulfone	CPMSO2
Chlorophenylmethyl sulfoxide	p-Chlorophenylmethyl sulfoxide	CPMSO
Dimethyldisulfide	Dimethyldisulfide	DMDS
Dithiane	Dithiane	DITH
SEMIVOLATILE ORGANIC COMPOUNDS/		
(Same as Phase I)		<u>svo</u>
VOLATILE AROMATIC ORGANIC COMPOUNDS/GCPID		VAQ
Benzene	Benzene	C6H6
Ethylbenzene	Ethylbenzene	ETC6H5
m-Xylene	m-Xylene	13DMB
o- and p-Xylene	Ortho- & Para-xylene	XYLEN
Toluene	Toluene	MEC6H5
VOLATILE HALOGENATED ORGANIC		
COMPOUNDS/GCCON		MAU
1,1-Dichloroethane	1,1-Dichloroethane	VHQ 11DCLE
1,2-Dichloroethane	1,1-Dichloroethane 1,2-Dichloroethane	
1,1-Dichloroethene	1,1-Dichloroethene	12DCLE 11DCE
1,1-Dictionathene		- -
1,1,1-iriculoroethane 1,1,2-Trichloroethane	1,1,1-Trichloroethane	111TCE
Carbon tetrachloride	1,1,2-Trichloroethane	112TCE
Carbon tetrachioride Chlorobenzene	Carbon tetrachloride	CCL4
	Chlorobenzene	CLC6H5
Chloroform	Chloroform	CHCL3
Methylene chloride	Methylene chloride	CH2CL2
Tetrachloroethylene	Tetrachloroethene	TCLEE
Trans-1,2-dichloroethylene	Trans-1,2-dichloroethene	T1 2DCE
Trichloroethylene	Trichloroethene	TRCLE

APPENDIX CS-A (Continued) Phase II

Analysis/Methods/Analytes	Synonymous Names Used in Appendix B	Abbreviations
VOLATILE HYDROCARBON COMPOUNDS/ GCFID Bicycloheptadiene Dicyclopentadiene Methylisobutyl ketone	Bicycloheptadiene Dicyclopentadiene Methylisobutyl ketone	HYDCBN BCHPD DCPD MIBK
VOLATILE ORGANIC COMPOUNDS/GCMS (Same as Phase I)		VO

Appendix CS-B
Chemical Data

APPENDIX CS-B Chemical Data

The analytical results of the laboratory analysis of soil samples collected as part of the program comprise the first part of Appendix CS-B. Data are listed sequentially by boring number and successive depths below the surface. Within each depth, all analytes for which the samples were tested are listed alphabetically. Results are given as less than (LT) the detection limit for the test laboratory, or as detected concentrations above this limit. Based on the accuracy of laboratory test methods, values for volatile and semivolatile compounds are considered accurate to one significant figure, values for dibromochloropropane when tested separately and for metals are considered accurate to two significant figures.

The second part of Appendix CS-B contains data from the blanks associated with the analytical work. Blanks for the soil samples were based on a homogenized subsample of composited samples from a known uncontaminated soil that is stratigraphically similar to the RMA soils. Blanks for the water samples were based on distilled water. Control samples, or blanks, are introduced into the train of environmental samples to function as monitors on the performance of the analytical method. These samples function as quality control (QC) samples, and are an integral part of the quality assurance (QA) program for the project. The method blanks listed in this Appendix were utilized to verify that the laboratory was not a source of sample contamination. If contamination were detected in a method blank, corrective actions were taken to assure that reported concentrations of target analytes reflected sample analytes, and not analytes introduced by the laboratory process.

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Boring Number

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BVM004 BVJ005 BVJ005 BVM004 BVO002 8V0002 8V0002 6V0002 800003 BVMDO4 BVKDO5 BVMDO4 BVOGO2 BV0002 BVM004 BVM004 BVM004 BVM004 BV0002 BV0002 SVM004 300002 BV0002 **BV0002** V0002 37300 300078 **BV0002** BVM004 BVM004 800002 **BVM004 3VM004** 3VM004 Chemical Sewers -- South Plants 0/07 0/00 0/00 0/00 0/00 0000 0/07 0/07 0/0n 0/07 0 0 0 0 0 0 0 0 0 0 0 0 0/07 0/00 0/05 0/07 Units 7997 7997 3. -01 8.2 +02 40 ę ę ģ 90 2.2 +01 3.02+02 ö 2.1 +00 ö -01 999 9999 1.02+01 1.9 +01 . 54+01 3.58+01 Results ۲ ביל 5 ۲ 5 ۲ Rocky Mountain Arsenai Program こしにした ここにに p-Chlorophenylmethyl Sulfide p-Chlorophenylmethyl Sulfoxide Diisopropylmethyl Phosphonate p-Chlorophenylmethyl Sulfone Hexachlorocyclopentadiene Chlorobenzene Analytical Parameters 1,1,1-Trichloroethane 1, 1, 2-Trichloroethene Cerbon Tetrachloride Dibromoch loropropane D1bromoch1oropropane Methylene Chloride 1,1-Dichloroethane 1,2-Dichloroethene 1,2-Dichloroethane Bicycloheptadiene Dicyclopentadiene Dicyclopentadiene Dimethyldisulfide Endrin Chloroform Ch.lordane D:thiane Dieldrin m-Xylene Chromium Atrezine Cadmium Arsenic Benzene Task 10 Aldrin Copper Sample 5011 Summary of Analytical Results Depth (ft)

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Summery of	Summary of Analytical Results	esults	Task 10 Chemical	Chemical Severs South Plants	Plants	
Boring	Depth (ft)	Sample	Anglytical Peremeters	Results	Units	Sample Number
1001000W21	Ø -	Soil	Mercury Isodrin Toluene Methylisobutyl Ketone Malathlon	LT 5.05-01 1. +00 2.3 +01 LT 701 LT 701	0/00	8VD015 BVP004 BVO002 BVO002 BVP004
			1,4-Oxathiane Lead Dichlorodiphenylethane Dichlorodiphenyltrichloro- ethane Parathion	LT 301 2.53+01 LT 601 LT 501	0/0n 0/0n 0/0n	8V1004 8V1005 8V1004 8V1004 8V1004
			2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates Tetrachloroethene Thiodigiycol Trichloroethene Ortho- & Para-Xylene	LT 601 9.1 +00 LT 2.55+00 LT 501 2.2 +01	0/00	8VM004 BV0002 BV0002 BV0002
1001000M21	12-13	5011	1,1,1-Trichloroethene 1,1,2-Trichloroethene 1,1-Dichloroethene 1,2-Oichloroethene 1,2-Oichloroethene	17 601 17 601 17 200 17 2. +00 17 601	0/07	8V0003 8V0003 8V0003 8V0003
			m-xylene Aldrin Arsenic Atræzine Bicycloheptædiene	1.3 +00 LT 301 4.55+01 LT 301 7.1 -01	0/07	BVOODS BVMOOS BVMOOS BVMOOS
			Benzene Carbon Tetrachloride Cadmium Methylene Chloride Chloroform	LT 301 3.6 -01 LT 7.36-01 2.9 +00 4.8 +00	0/000	8V0003 8V0003 8V1006 8V0003 8V0003

Note: Results for some parameters may appear in more than one analytical fraction.

Chemical Severs -- South Plants Rocky Mountain Arsenal Program Task 10 Summery of Analytical Results Ebases Services Incorporated

Depth (ft)

Boring Number 12-13

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Sample	BVMOOS	NO CONT	BVMOOS	BVMDDS	BVMO05	BVHOOS	803006	BV3006	BVMOOS	800003	BVM005	800008	BVMOOS	BVMOOS	BVM005	8004005	800003	BVROOS	BVOODS	BVD016	BV#005	8V0003	800003	BVMOOS	8044005	8V3006	BVMODS	BVMD05		BVM005	BVMO05	800003	561002
Units	0/8n	0/011	0/00	0/00	0/00	0/00	0/00	0/00	0/00	6/60	0/00	0/00	0/00	0/05	0/00	0/00	0/07	0/00	0/07	8/8n	9/90	0/07	8/87	0/00	0/80	0/00	0/00	0/00		0/00	0/00	6/6n	0/00
. 1	-01	5	2	9	ē	1 0	6.53+00	3.35+01	ō	÷01	Ģ	-0-	90	Ş	-01	9	10+	ó	ö	5.00-02	ō				ō	8.38+00	-01	0		<u>-</u> 0	-Ģ	6.8 -01	3,19+00
Results	Ġ.	-			'n	'n	6.5	3	ъ,	7.4		7.	'n.	-	4	'n	7	6	;	8.0	•	6	. 5	7.	ņ	8	ý	ń		ó	ć	6.8	
8	1	-	-	-	ב	ב			ן		ב	ב	-	5	בו	1		-	-	7	7	l		_	ב	1	ב	1		ב	ב		
Analytical Parameters	Hexach lorocyclopentadiene	Chlorobenano		o-Chloropheny (methy) Suitide		p-Chlorophenylmethyl Sulfone		Copper	Dibromochloropropane	Dibrom ochloropropane	Dicyclopentadiene	Dicyclopentadiene	Vacous	Dilsopropylmethyl Phosphonate	Dithiane		Disethy) disulfade	Footba	Ethylbenzene	Mercury	Cirpos	Tolinen	Methylisobutyl Ketone	Melathion	1,4-0xathlane		Dichlorodiphenylethane	Dichlorodipheny Itrichloro-	ethane	Parathion	2.Chloro-1(2.4-Dichlorophenyl)	Tetrachloroethene	15,00101001
Sample	5011	1																															

Chemical Severs -- South Plants Rocky Mountain Arsenal Program Task 10 Summary of Analytical Results Ebasco Services Incorporated

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1 01000W21

Boring Number

1001000W21

Sample Number	800003	800003	BV3006	800004	BV0004	BVOOD4	50004	800004	800004	BVMOD6	BVK007	BVM006	BV0004	8V0004	BV0004	BVJ007	BV0004	BV0004	BVH006	BV0004	BVM006	BVM006	BVM006	8VM006	843007	8v3007	BVM006	800004	BVM006	800004	BVM006	BVM006	3VH006
6 2	20	8	€	2	2	20	€	3	20	2	è	2	2	\$	10	2	20	2	2	8	20	Ş	2	6	20	2	8	2	2	2	20	8	2
Unita	0/60	0/07	0/00	0/00	0/07	0/00	0/00	0/00	0/00	0/00	0/00	6/6 0	6/8n	8/60	8/8 0	0/00	8/8 7	0/00	0/00	0/00	B/87	0/00	0/00	0/00	0/05	0/00	8/8n	6/6n	0/00	0/00	0/60	0/00	0/00
.	-01	Ş Ş	8.48+01	Ģ	-01	Ş	Ô	ő	ō	+05	1.22+01	-01	00+	Ģ	-01	7.36-01	ş	Ģ	-01	90	Ş	1 0-	-01	-01	6.53+00	3.67+01	1 0-	0	9	ō	9	9	-01
Results	w.	ن	8.4	4	4	6	6	Ġ	60	Η;	7	₩,	2.4	*)	6.5		6	9.6	.	2.5	~	o.	'n	'n.	9	۵.	ń	6.1	1.	۲.	r,	-	4
8	נ	-		-	ב	ב	-1	L	-			ב		5		ב	ב		נו		-	רו	L	-	ב	-			ב	-	Ľ	ב	L1
Analytical Parameters	Trichloroethene	Ortho- & Para-Xylene	Zinc	1,1,1-Trichloroethane	1.1.2-Trichloroethane	1,1-Dichloroethane	1,2-Dichloroethene	1,2-Dichloroethane	B-Xylene	Aldrin	Arsenic	Atrozine	Sicycloheptadiene	Benz∵ie	Carbon Tetrachloride	Codmitte	Methylene Chloride	Chloroform	Hexachlorocyclopentadiene	Chlorobenzene	Chlordane	p-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfoxide	p-Chlorophenylmethyl Sulfone	Chromium	Copper	Dibromochloropropane	Dibromochloropropane	Dicyclopentadiene	Dicyclopentadiene	Vepone	Diisopropylmethyl Phosphonate	Dithiane
Semple Type	Sof 1			Soil																													
Depth (ft)	12-13			17-18																													

Rocky Mountain Arsenal Program	Chemical Severs South Plants
Œ.	Task 10
Ebasco Services Incorpurated	Summary of Analytical Results

Boring Number	Depth (ft)	Sample	Analytical Parameters	Ŗ	Results	_	Units	Sample Number
1001000421	17-18	Sof 1	Dieldrin Dimethyldisulfide Endrin Ethylbenzene Mercury	בנכנ	801 2. +01 501 502	55555	00000	BVH006 BV0004 BVH006 BVO004 BV0004
			Isodrin Toluene Methylisobutyl Ketone Melathion 1,4-0xathlane	דרר	10220	5 5 5 5 5	0 0 0 0 0	8V0004 8V0004 8V0004 8VH006
			Lead Dichlorodiphenylethane Dichlorodiphenyltrichloro- ethane Parathion 2-Chloro 1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates	דָּד	2. 45+01 601 501 2. 5 +01 3. +00	5 5 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	000000	BVHOO6 BVHOO6 BVHOO6 BVHOO6 BVHOO6
			Tetrachloroethene Thiodiglycol Trichloroethene Ortho- & Para-Xylene Zinc	בבב		9.0 -01 2.85+00 501 5. +00 9.94+01	0 0 0 0 0	8V0004 881003 8V0004 8V0004 8V1007
1001000W21	22-73	Soil	1,1,1-Trichloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane	בבבבב	44449	÷	0/0n 0/0n 0/0n	8V0005 8V0005 8V0005 8V0005
,			m-xylene Aldrin Arsenic Atrazine Bicycloheptadiene		801 301 2. 50+00 301 401	00000	00000	8V0005 8VM007 8VK006 6VM007 BV0005
			Benzene	-	'n	-0-	0/60	800008

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	Depth (ft)	Sample Type	Analytical Parameters	Ě	Results		Unite	Sample Number
100100101	3224	1 108	Terrachion Tetrachion	=		1	0/91	ACCOUNT
***************************************				; <u>-</u>	, N	7 36-01	0/07	SV TOP
			Methylene Chloride	- 1	. ,	, Ş	0/9/	RV0005
			Chloroform	;	4	-01	0/07	80000
			Hexach lorocyc lopentadiene	LT	ø	ő	0/05	BVM007
				-	-	ξ	6/07	RUCONS
				-		ξ	0/07	BVM007
			p-Chlorophenylmethyl Sulfide	, <u>.</u>		ō	0/05	8VM007
				-	'n	Į O	0/00	BVM007
			p-Chlorophenylmethyl Sulfone	ב	.	1 0	B/8n	BVM007
			Chrostus		6.5	6.53+00	0/00	8V3008
			Copper		6.0	4.01+01	0/00	BV3008
			Dibromochloropropane	11	'n	-01	0/00	BVM007
			Dibromochloropropane	ב	6	Ş	0/00	B V0005
			Dicyclopentadiene	ב	-:	ô	0/00	BVM007
			Dicyclopentadiene	1	۲.	ō	0/00	800008
			Vaponts	ב	'n	ô	0/07	BVH007
			Offsopropylmethyl Phosphonate	L'1	.	00	0/00	BVM007
			Dithiane	ב	÷	Ģ	8/8 0	BVM007
			Dieldrin	ב	r,	ē	0/00	BVH007
			Dimethyldisulfide	11	6	10+	0/00	BV0005
			Endrin	ב	<u>ن</u>	ő	0/00	BVH007
			Ethylbenzene	-1	4	ō-	0/00	80000
			Mercury	ב' ב'	ri R	5.00-02 301	0/07 07	8V0018 8VH007
				ı				
			Toluene	<u>.</u> .	ni 1	, 0	0/0n	80000
			Methylisobutyl Ketome	֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֡		0	0/07	80000
			Malathion	֖֖֖֖֖֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓		0	0/00	SVHOO
			1,4-Oxathiane	ר	'n	Ö	0/00	
			Lead		Ý.	1.64+01	0/25	867208
			Dichlorodiphenylethane	- 1	•	-01	0/00	BVM007
			Dichlorodiphenyltrichloro-	ב	'n	-01	0/00	6VM007
			ethane					

Ebasco Services	ices Incorporated	stea	Rocky Mountain Arsenal Program	ogram		01/27/88
Summary of Analy	malytical Results	sults	Task 10 Chemical	Chemical Severs South Plants	Plants	
Boring Number	Depth (ft)	Sample	Analytical Parameters	Results	Unita	Sample Number
1001000151	22-23	Soft	2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates Tetrachloroethene Thiodigiycol Trichloroethene	LT 601 LT 301 LT 2.55+00 LT 501	0 000	BVM007 BVM005 BB 1004 BVM005
			21nc	. 6	9	8V3008
1001000W21	27-28	504	1,1.1-Trichloroethane 1,1.2-Trichloroethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane	LT 201 LT 2. +00 LT 2. +00 LT 2. +00 LT 6. +00	00000	8V0006 8V0006 8V0006 8V0006
			m-Xylene Aldrin Arsenic Atrazine Bicycloheptadiene	LT 801 1. +01 LT 2.50+00 LT 301 LT 401	00000	8V0006 8VH008 8VK009 8VH008 8V0006
			Benzene Carbon Tetrachloride Cadmium Hethylene Chloride Chloroform	9.8 -01 LT 301 LT 7.36-01 LT 2. +00 7.0 +00	0/000	8 V 0006 8 V 0006 8 V 1009 8 V 0006 8 V 0006
•			Hexachlorocyclopentadiene Chlorobenzene Chlordane p-Chlorophenylmethyl Sulfide p-Chlorophenylmethyl Sulfide	LT 501 LT 2. +00 LT 2. +00 LT 301	00000	8V1008 BV0006 BV1008 BV1008
			p-Chlorophenylmethyl Sulfone Chromium Copper Dibromochloropropane Dibromochloropropane	LT 501 LT 6.53+00 4.18+01 401 LT 2. +00	00000	8VM008 8VJ009 8VJ009 8VM008 8V0006
			Nicyclopentadiene	1. +00	0 /011	BVMOOB

Chemical Severs -- South Plants

Undinomial 27-28 Soil Dicyclopentadiene Vapona Dithiane Dithiane District	Sample Depth (ft) Type Analytical Parameters	Results	Units	Sample
6.9-7.9 5011		κ,	0/00	800006
6.9-7.9		, ·	D/07	8044008
6.9-7.9 5011	U11sopropyImethyl Phosphonate	.	0/07	5VM008
6.9-7.9 5011	Dithighe	L1 401	0/00	
6.9-7.9 5011	Dieldrin	1. +00	0/00	BVM006
6.9-7.9 \$011	Dimethyldisulfide	LT 2. +01	0/00	800006
6.9-7.9 5011	Fndrin	,	0/05	8044008
6.9-7.9 Soil	Ethylbenzene	LT 401		80000
6.9-7.9 Soil	Menouny	LT 5.00-02		BV0019
6.9-7.9 Soil	Isodrin			BVMODB
6.9-7.9 5011	Toluene	5.1 -01	0/00	800008
6.9-7.9 Soil	Methylisobutyl Ketone		0/00	800008
6.9-7.9 Soil	Malathion	۲.	0/07	800408
6.9-7.9 5011	1.4-0xethlene	'n	0/00	800408
6.9-7.9 Soil	Lead .	1.43	0/00	60000
6.9-7.9 Soil	Dichlorodiphenylethane	1 601	0/00	800408
6.9-7.9 Soil	Dichlorodiphenyltrichloro-		0/00	8044008
6.9-7.9 5011	ethane		,	
6.9-7.9 5011	Perathion	LT 901	0/00	BVM008
6.9-7.9 5011	2-Chloro-1(2,4-Dichlorophenyl)	. +	0/00	BVMOOS
6.9-7.9 Soil 1	Vinyldiethyl Phosphates			
6.9-7.9 5011	Tetrachloroethene	LT 301	0/00	80000
6.9-7.9 5011	Thiodiglycol	LT 2.55+00	0/00	661005
6.9-7.9 5011	Trichloroethene	1.1 501	0/00	BV0006
6.9-7.9 Soil	Ortho- & Para-Xylene	LT 5. +00	0/00	80000
6.9-7.9 5011	Zinc	9.90+01	0/00	803009
		LT 601	0/00	8VW002
1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane m-xylene Aldrin	1,1,2-Trichloroethane	L7 4. ·01	0/00	BVW002
1,2-Dichloroethene 1,2-Dichloroethane m-xylene Aldrin	1,1-Dichloroethane		0/00	BVW002
1,2-Dichloroethane m-xylene Aldrin	1,2-Dichloroethene	LT 2. +00	0/6n	BVW002
m-xylene Aldrin	1,2-Dichloroethane	LT 601	0/00	BVW002
Aldrin	s-xylene	9.9 +01	0/07	BVW002
	Aldrin	1 +04		RVPDOS
	Argent	1.25+02		BUFO11

Note: Results for some persmeters may appear in more than one analytical fraction.

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6VM002 6VP003 6VP003 6VV005

7. -01 3. -01 6. +00 2.16+01

בבב

Methylisobutyl Ketone Malathion 1,4-Oxathiane Lead

Ebasco Services Incorporated

Summery of	Summery of Analytical Results	sults	Task 10 Chem	ical Se	8 L0 3	mos	Chemical Sewers South Plants	
Boring Number	Depth (ft)	Sample Type	Analytical Parameters		8 8	Results	units	Sample Number
1001000425	6.9.7.9	5011	Dichlorodiphenylethane Dichlorodiphenyletichioro-	· 	נ	301	0/00	BVP003 BVP003
			ernanc Pathlon 2-Chloro-1(2,4-Dichlorophenyl) Viryldiethyl Phosphates		לל	401 301	0/00	BVP003 BVP003
			Tetrachloroethene			3.7 +01	0/00	BVW002
			Thiodiglycol Trichloroethene Ortho- & Para-Xylene Zinc		11	1.44+01 501 4. +01 9.20+01	00/00	8V0006 8V4002 8V4005
1001000W25	11.8-12.8	Sof 1	1,1,1-Trichloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane		ול ל ל ל ל ל ל	5.2.4.6.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0	00000	BVMDO3 BVMDO3 BVMDO3 BVMDO3

6VV006 6V4003 6V4003 BVW003 BVP004 BVP004 800007 BVP004 **BVP004** 99999 0/07 0 0 0 0/00 3.6 +00 7.36-01 8.5 +00 6.0 +00 3, 55+01 1. +00 6.53+00 ē **8** 00+ ó בב 5 ۲ p.Chlorophenylmethyl Sulforide p.Chlorophenylmethyl Sulfore Chromium p-Chlorophenylmethyl Sulfide Hexach lorocyc lopentadiene Methylene Chloride Chloroscetic Acid Chlorobenzene Chloroform Chlordene Cadmium

BVP004 6VW003

0/07

BVWOOS SVMDO3

1.2 +00

Carbon Tetrachloride

Benzene

Bicycloheptadiene

Atrazine

Arsenic Aldrin

m-Xylene

BVWD03

9/95

1.1 +00

0/00

3. -01 8.0 +00

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Results for some parameters may appear in more than one analytical fraction. Note:

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Summery of Analytical Results

Chemical Severs -- South Plants

ا خ	Depth (ft)	Type	Analytical Parameters	Results	Unit:	Number
1001000025	11.8-12.8	Sof 1	Copper	4. 26+01	0/00	80000
			Dibrosochloropropene	9. +01	B/80	8VF004
			Dibromochloropropane	1.7	0/0 0	BVMDOS
			Dicyclopentadiene	.	0/05 5	87004
			Dicyclopentadiene	LT 701	0/0 0	BVWOOS
			Vapona	LT 301	0/00	87004
			Diisopropylmethy! Phosphonate	'n	0/00	BVFOOA
			Dithiane	7.	9/90	8VF004
			Dieldrin	LT 301	B/80	8VP004
			Dimethyldisulfide	LT 2. +01	0/00	BVMODS
			Endrin	LT 301	B/00	8VP004
			Ethylbenzene	LT 401	9/00	BVUDD3
			Mercury	6.53-02	B/87	BWE007
			Isodrin	LT 301		BVF004
			Toluene	6.9 +00		BWMOOJ
			Methylisobutyl Ketone		0/00	BVWOO3
			Malathion	LT 301	0/63	8VP004
			1,4 Oxathiane	17 6. +00	0/00	BVPOD
			l.ead	1.75+01	8/67	80000
			Dichlorodiphenylethane	LT 301	0/00	874004
			Dichlorodiphenyltrichloro-	.s. +00	0/00	80100
			ethere	,	4/400	700
					D \ 0	
			<pre>Z-chioro-112.4-Dichiorophenyi) Vinyldiethyl Phosphetes</pre>	01	0 /00	
			Tetrachloroethene	4.7 +00	9/07	BV4003
			Thiodigiyesi	L.T 4.20+00	0/00	BV0007
			Trichloroethene	LT 501	0/00	800903
			Ortho- & Para-Xylene	ĸ,	0/07	BVWOOS
			Zinc	8.49+01	9/00	80000
	16.2-17.2	5011	1,1,1-Trichloroethane	LT 401	9/80	BVMOOA
			1,1,2 Trichionoethane	LT 401	0/00	BVW004
			1,1-Dichloroethane	LT 2. +00	6/60	BVM004
				•	•	3

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Summery of Analytical Results Ebasco Services Incorporated

Depth (ft)

Box ing Number

16.2.17.2

1001000W25

Sample Number	8V4004	8V4004	600409	644 013	BVP005	BVIJO04	BVILDOA	BVHOOL	8VV007	BVLOOA	BVMODA	6VP005	800008	BV4004	800408	8VP005	6VP005	BVP005	80007	BVV007	6VP005	BVW004	6VP005	BVH004	6VP005	801-005	BVF005	600408	804004	BVP005	804004	BMEDDB	6VP 005	6VM004
Units	0/07	0/00	0/00	0/00	0/0 0	0/80	0/07	0/07	0/00	0/00	9/90	0/00	0/95	0/07	0/90	0/00	0/00	9/90	0/00	6/6n	0/07	0/00	0/00	0/07	0/07	8/87	8/87	0/00	0/05	0/95	0/00	0/00	9/87	0/00
Results	-	LT 601	LT 301		LT 301	LT 601			LT 7.36-01		LT 301	17 301	LT 3.55+01		LT 601	LT 4. +00		LT 601	8	3.84+01	LT 301			LT 701			LT 7. +no	LT 301	11 2. +01	LT 801			LT 301	
Analytical Parameters	1,2-Dichloroethane	B-Xylene	Aldrin	Arsenic	Atrazine	Blovelobeotediene		Carbon Tetrachloride		iethylene Chloride	Chloroform	Hexachlorocyclopentadiene	Chloroscetic Acid	Chlorobenzene	Chlordene	p-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfoxide	p-Chlorophenylmethyl Sulfone		Copper	Dibrosochianopropane	Dibromochloropropane	Dicyclobentadiene	Dicyclopentadiene	Vapone	Dilsopropylmethyl Phosphonate	Dithiane	Dielorin	Dimethy 1disulfide	Endrin	Ethylbenzene	Mercury	Isodrin	Toluene
Sample Type	5011																																	

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Note: Results for some parameters may appear in more than one analytical fraction.

Ebasco Servi	Ebasco Services Incorporated	ated	Rocky Mountain Arsenal Program	BI Prou	E 0				01/27/88
Summery of A	Summery of Analytical Results	sults	Task 10 Chemi	Chemical Sewers	ŝ	!	South Plants	ıt s	
Bortno	Depth (ft)	Samere	Analytical Persmeters] 	Res	Results	Units	2	Seep 1 e Number
10010000155	16.2-17.2	5011	Methyliabbutyl Ketone Malathion 1.4-Oxathiane Lead Dichlorodiphenyltrichloro- ethane Perathion 2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates Tetrachloroethene Ihiodialycol Trichloroethene Ortho- & Para-Xylene	â	בל כל כל כל כל ללכל	301 5. 20+00 6. 38+00 6. 38+00 601 601 601 701			BVMDD6 BVPD05 BVPD05 BVPD05 BVPD05 BVPD05 BVMD06 BVMD06 BVMD06 BVMD06 BVMD06
1001f00M25	21.1-22.1	501	Zinc 1.1.1-Trichloroethane 1.1.2-Trichloroethane 1.2-Dichloroethane 1.2-Dichloroethane 1.2-Dichloroethane M-Xylane Aldrin Arazine Benzene Carbon Tetrachloride Cadmium Methylene Chloride Chloroscetic Acid Chloroscetic Acid Chlorobenzene Chlordane		######################################	9			8VV007 8VV005 8VV005 8VV005 8VV005 8VV006 8VV006 8VV005 8VV006 8VV006 8VV006 8VV006 8VV006 8VV006 8VV006 8VV006 8VV006

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Franco Serv	Fbasco Services Incorporated	atrd	Rocky Mountain Arsenal Program	MBTDOT			01/27/88
Summary of	Summary of Analytical Results	s titte	Task 10 Chemical Severs	Severs	1	South Plants	
Bor frog Number	Depth (ft)	Samete	Analytical Perameters	82	Results	Units	Semple Number
1001000025	21.1-22.1	Soil		17	4. +00		BVP006
			p-Chlorophenylmethyl Sulfoxide	ב	2. +00		BVP006
			p-Chlorophenylmethyl Sulfone	ב ב		0/07	8VP006
			Copper	;	3.69+01		BVVDO8
			Dibrosochioropane			04/0	8VP006
			Dibromochloropropane	; ;	2		BVW005
			Dicyclobentadiene	ב			BVP006
			Dicyclopentadiene	11			BVW005
			Vapona	ר		0/00	BVP006
			Diisopropylmethyl Phosphonate	<u>-</u>		0/00	8VP006
			Dithiane	ב	7. +00		BVP006
			Dieldrin	ב		0/00	BVP006
			Dimethyldisulfide	ב	2. +01		BVWOOS
			Endrin	L.T		0,60	BVP006
			Ethylbenzene	1	401	0/00	BVW005
			Zerouty	-	5.00-02		BME009
			Isodrin	-	3.		BVPOO
			Toluene	ב	301		BVW005
			Methylisobutyl Ketone	ב			BVWDDS
			Melethion	۲	3.	0/00	BVF006
			1,4-0xathiane	-1	. +00		BVP006
			Lead		1.42+01		800008
			Dichlorodiphenylethane	ב	301		8VP006
			Dichlorodiphenyltrichloro- ethene	ב ^י	•	0/00	BVP006
						9/90	8VP006
			2-Chloro-1(2.4-Dichlorophenyl)	ב	3.		875006
			Vinyldiethyl Phosphates				
			Tetrachloroethene	1	301	0/00	BVWOOS
			Thiodigiycol	-1	4.20+00		800009
			Trichloroethene	ב	501		8VW005
			0	-	4	0/51.	ACCIONA
				;	- 70		BVVDOS

Note: Results for some parameters may appear in more than one analytical fraction.

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Ebasco Services Incorporated Summary of

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vices Incorporated	70	Rocky Mountain Arsenal Program	Arsenal Program		6
Analytical Results	٠ -	Task 10	Chemical Severa South	South Plents	
Septh (ft)	Semple	Analytical Parameters	Results	Unita	Sample Number
26.2-27.2	Soi 1	1,1,1-Trichloroethene	LT 401 17 401	6/6n	8VW006
		1,1-Dichloroethane	i 0 0	000	BV4006 BV4006
		1,2-Dichloroethane	LT 601	0/00	8V4006
		m-Xylene	LT 801	0/00	BVWDO6
		Arsenic Bloycloheptadiene		9/9	BVW006
		Benzene Carbon Tetrachloride	LT 301	0/00	BVWOO
			7	, ,	
		Methylene Chloride		3	BVHOO
			1.4	0/05	BVW006
		Chloromeetic Acid	LT 3.55+01	0/00	800010
			;		
		Chromium	1.62+01	0/00	80000
		Dibromochloropropane	; ;	0/00	8V4006
		Diovolopentadiene	LT 701	0/00	BV4006
			i		
		Ethylbenzene	LT 401	0/00	BVWOO
		Tolligon	20-02 1 3 -01	0/0/	BVLOCK RVLOCK
		Methylisobutyl Ketone		0 0	BVWOO
		Lead		0/00	BVVC09
		Tetrachloroethene	1.7 301	0/00	BVW:06
		Thindiglycol	4.20	0/00	BV001 0
		Trichloroethene		٥/65 دورو	BVWOO
		Ortho- & Para-Xylene		0/00	BVW006
		Zinc	1.13+02	0/00	80000
6.5-7.5	5011	1.1.1-Trichloroethane		0/00	BVW007
	· ·	1.1,2-Trichloroethane	LT 401	0/00	BVW007

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Ebasco Serv	Ebasco Services incorporated	pers.	Rocky Mountain Arsenal Program	Program				01/27/8
Summery of	Analytical Results	sults	lask 10 Chemical Severs	1 Sewer	1		South Plants	
Roring	Depth (ft)	Semple	Analytical Parameters	•	Results	l te	Unita	Sample Number
1001000W27	6.5-7.5	5011	1,1-Dichloroethane	ב		Ş	0/60	8W4007
			1,2-Dichloroethene	ב	'n	00+	0/00	BVW007
			1,2-Dichloroethane	1		-01	0/00	8VW007
			B-Xylene	7		-01	6/80	BVW007
	-		Aldrin		-	+05	0/80	BV2002
			Arsenio		-	1.54+01	0/80	BUF 006
			Atrozine	וין		Ö	0/00	872002
			Bicycloheptadiene				0/00	6V4007
			Benzene	ב		-01	0/00	BVW007
			Carbon Tetrachloride	LT		-01	0/00	BVW007
						7.36-01	0/07	800010
			Methylene Chloride	בי		9	0/00	8V4007
			Chloroform	5			04/0	8VW007
			Hexachiorocyclopentadiene	LI		o o	0/00	BVZ002
			Chloroacetic Acid	5		3,55+01	0/0 0	800011
			Chlorobenzene	ļ		90	0/90	BVW007
			Chlordene	ב	8		0/00	BVZ002
			p-Chlorophenylmethyl Sulfide	-1			0/00	BVZ002
				ב	'n		0/00	BVZ002
			p-Chlorophenylmethyl Sulfone	ב		-0 1	0/00	BVZ002
			Chromium		-	1.57+01	0/00	BVV010
			Copper		•	4.05+01	0/00	BVV010
			Dithromochloropropane	L.		7.9 +00	0/00	BVW007
			Ditromochloropropene				0/0n	BV2002
			Dicyclopentadiene	ו'ם	۲.	-01	B / B n	BV4007
			Dicyclopentadiene	ר		00+	0/00	BVZ002
			Vapona	LT			0/00	BV2002
			Diisopropylmethyl Phosphonate	11			0/00	BV2002
			Dithiane		4	ō	o/or	872002
			Dieldrin		o.	1 0	0/00	872002
			Dimethyldisulfide	ב		+01	0/00	BVW007
			Endrin	- 1		501	0/05	BVZ002
			Ethylbenzene	ב		1 0-	0/00	BVW007
			Mercury		ς;	04 +00	e/en	BME011

Note: Results for some parameters may appear in more than one analytical fraction.

Ebasco Services	ices Incorporated	ated	Rocky Mountain Arsenal Frogram	we undo.		01/27/88
Summary of	Summary of Analytical Results	sults	Task 10 Chemical	Chemical Sewers South Plants	Plant.	
Boring	Depth (ft)	Sample	Analytical Parameters	Results	Unita	Sample Number
1001000027	6.5-7.5	Soft	Isodrin Foluene Methylisobutyl Ketone Melethion 1,4-Oxethiene	LT 301 LT 701 LT 701 LT 701 LT 301	0/00 0/00 0/00 0/00	BVZ002 BVH007 BVH007 BVZ002 BVZ002
			Lead Dichlorodiphenylethane Dichlorodiphenyltrichloro- ethene Parathion	4.89+01 2. +00 2.5 +01 LT 901	00/00/00	6V2002 6V2002 6V2002 6V2002
			2-Chloro-1(2,4-Dichlorobhenyl) Vinyldiethyl Phosphates Vinyldiethyl Phosphates Tetrachloroethene Thiodiglycol Trichloroethene Ortho- & Pare-Xylene Zinc		0 00000	6VZ002 6V4007 6V4007 8V4007 8V4007 8V4010
1001000M27	11.5-12.5	3 01.1	1,1,1-Trichloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,2-Dichloroethene 1,2-Dichloroethane	LT 401 LT 201 LT 2. +00 LT 2. +00 LT 601	00000	8V4008 6V4008 6V4008 8V4008
			m-Xylene Aldrin Arsenic Atrmzine Bicycloheptadiene	LT 801 8.8 +01 LT 2.50+00 LT 301 2.7 +01	00000	8VE003 8VZ003 8VZ003 8VZ003 8VZ003
			Benzeng Carbon Tetrachloride Cadmium Methylene Chloride Chloroform Hexachlorocycloperitadiene	1.4 +00 2.0 +01 LT 7.36-01 LT 2. +00 5.1 +00	000000	6V4008 6V4008 6V4008 6V4008 6V2003

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ces Incorporated	ted	Rocky Mountain Arsenal Program	Arsenal Pr	ogram				01/52
nalytical Results	6 1 T =	fask 10	Chemical Sewers	8. T. F. S. C. S.	i	south	South Plants	
Depth (ft)	Sample	Analytical Persmeters		8	Results	.	Unite	Sample Number
11 5-12 5	1,105	Chloroscatic Acid		-	ď	1 55401	0/07	RV0012
	;	Chlorobenzene				9	0/0/	BVWOOR
		Chlordene		<u>ב</u>		Ş	0/07	602003
		heny lmethy l	Sulfide	-	o.	-01	0/07	BVZDOS
		p-Chlorophenylmethyl Su	Sulfoxide	ב	٠;	ō	0/80	872003
		p-Chlorophenylmethyl Sc	Sulfone		P)	-01	0/0/	872003
		Chromium			7.6	1.66+01	0/07	800011
		Copper			3.5	3.57+01	a/an	BVV011
		Dibromochloropropene			1.6	1.6 +02	0/00	BVMODB
		Elbromochloropropane			رب ب	† 01	0/00	BVZODS
		Dicyclopentadiene		-		ō	0/00	BVWOOB
		Dicyclopentadiene		ב	-	ô	0/00	BV2003
		Vapona		5	ņ	ģ	0/00	BVZ003
		Disopropylmethyl Phosphonate	phonate	-	1.	ģ	0/00	BVZ003
		Dithiane		ב	4	ö	0/00	8V2003
		Dieldrin			8	9	0/00	872003
		Dimethyldisulfide		ר	ď	ō	0/07	BUNDUS
		Endrin		ב	٠.	<u>-</u> 0	0/00	8VZ003
		Ethy Ibenzene		ר ר	4	-o	0/07	BVMODB
	·	Mercury			6.1	6.14-02	0/00	SWED12
		Isodrin			ė	Ş	0/00	BVZ003
		Toluene			4.7	ō	0/07	BVWOOB
		Methylisobutyl Ketone		ב	۲.		0/00	BVWOOR
		Malathion		_	۲.	õ	0/07	BV20C3
		1,4-0xathiane		ב ^י	'n	ō	D/07	8V20U3
		L ead			2.3	2.38+01	0/00	BVV 01.1
		Dichlorodiphenylethane		7	ó	-01	0/00	BVZ003
		Dichlorodiphenyltrichloro-	oro-		~	9	0/07	BVZ003
		ethere		-	d	ë	-/	10000
		Farathion	•	_	;	5 6))	SINCE
		Z-Chioro-i(Z,4-Dichlorophenyi) Vinyidiethyi Phosphates	oprenyl) es		ni .	3	0/07	\$102A8
		Tetrach once there			1.2	1.2 +01	0/07	BVMODS
		Thiodiglycol		נו	4.2	4.20+00	0/00	800012

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ces Incorporated	ted	Rocky Mountain Arsenal Program	enal Pro	gram				01/2
nalytical Results	ults	183K 10 Ch	Chemical S	A T-0.3-02	;	South	South Plants	
Depth (ft)	Sample	Analytical Parameters		Re	Results		Units	Sample Number
11.5-12.5	Soil	Trichloroethene Ortho- & Pera-Xylene		לל	6.60	0 0 0 0	0/07	BVWDDB
16.2-17.2	Soi 1	7.10.1.1.1-Trichloroethane 1.1.2-Trichloroethane 1.1.2-Trichloroethane		בננ		1.01+02 301		BW011 BWC002 BWC002
		1,2-Dichloroethene 1,2-Dichloroethane		בלו		9 6	000	84C002 84C002
		m-Xylene Aldrin Arsenic Atrazine Bicycloheptadiene		נו וו	とまる 型	701 1. +02 2. 50+00 301 4. +00	00000	8WCD02 8WZD04 8WZD04 8WZD04 8WZD04
		Benzene Carbon Tetrachloride Cadmium Methylene Chloride Chloroform		ב ב	3. 3. 1. 3. 36.	301 1. +01 7.36-01 2. +00 1.1 +01	0/07	BWC002 BWV012 BWV012 BWC002
		Hexachlorocyclopentadiene Chloroscetic Acid Chlorobenzene Chlordsne p-Chlorophenylmethyl Sulfide	ų.	בבבב	7 20 20 40 40 20	701 3.55+01 301 2. +00 901	00000	8V2004 8V0013 8WC002 8V2004
		p-Chlorophenylmethyl Sulforide p-Chlorophenylmethyl Sulfone Chromium Copper Dibromochloroprobane	x 1 de ne	לל	88.59.1 1.5.1	301 7.19+01 3.79+01 1. +02	0 0 0 0 0	8V2004 8V2004 8VV012 6V2004
		Dibromochloroprobane Dicyclopentadiene Dicyclopentadiene Vapona Dilsopropylmethyl Phosphonate	ā r	ניני	8. 1	99799	00000	BWC002 BVZ004 BWC002 BVZ004 BVZ004

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ces Incorporated	ted	Rocky Muchitain Arsenal Program	we.ibo.			01/27,
nalytical Results		rask 10 Chemical	(hemical Severs South Plants	- South	Plants	
Depth (ft)	Semple Type	Analytical Parameters	Results	lts	Units	Sample Number
16.2-17.2	5011	Dithiene	T. 4	-01	0/00	6V2004
		Dieldrin Diestroldieuleide	• • • ·-	6 5	0/00	5VZ004
		Endrin			0/05	BV2004
		Ethy Ibenzene			0/00	BMC002
		Menounk	11	5.00-02	0/00	BLAE 013
		Citoosi		9	0/05	872004
		Toluene	-		0/00	8MC002
		Methylisobutyl Ketone			0/07	6MC002
		Melethion	11 2	٠ -0	0/05	872004
		1,4-Oxethiene	L1 3.	٠ م	0/00	BV2004
		Lead		8.38+00	0/00	600012
		Dichlorodiphenylethane		ē.	0/00	8V2004
		Dichlorodiphenyltrichloro-			0/00	8 V2004
		ethane			17	,000,110
		Perethion		۶	D /0	BVZUUA
		2-Chloro-1(2,4-Dichlorophenyl)	7.	01	0/00	802004
		Vinyidiethyl Phosphates	,		•	
		Tetrachloroethene		- -	0/00	BMC002
		Thiodialycol		X	0 0 0	BV0013
		Trichloroethene	בי בי	301	9	BWC002
		Ortho- & Para-Xylene			0/05	SHC002
		Zinc	•	8.36+01	0/00	BVV012
21.2-22.2	Sofi	1,1,1-Trichloroethane		-01	0/00	BWCOO3
		1,1,2-Trichloroethane			0/00	BHC003
		1,1-Dichloroethane	LT 9.		0/00	6MC003
		1,2-Dichloroethene			0/00	BMC003
		1,2-Dichloroethane		01	0/00	BMC003
		5-X-1656	11 7	-01	0/00	BMCOOS
		Aldrin		-01	0/00	BV2005
		Arsenic		. 50+00	0/00	BMF 009
		Atrazine	רן מ	301	0/07	872005
		Bicyclohentadiene	~	8	0/8 n	BMC003

1001000W27

Ebasco Serv	Ebasco Services Incorporated	eted	Rocky Mountain Arsenal Frogram	00r.Bn				01/22/
Summery of	Summery of Analytical Results	sults	Task 10 Chemical Sewers South Plants	Sewers	1	outh	Plants	
Boring	Depth (ft)	Sample Type	Anslytical Parameters	8	Results		Unite	Semple Number
1001000027	21.2-22.2	Soil	Benzene Carbon Tetrachloride	ָרָבָּי <u>, רָב</u>	એ લ સ	<u> </u>	9/90	BUCCOS BUCCOS
			Cedmium Methylene Chloride Chloroform	<u>.</u>	2. 36-01 7. 450 7. 450	<u> </u>	0/00	BWC003 BWC003
			Hexachlorocyclopentadiene	5:		0-10-	0/00	6VZ005
			Chlorobenzene	נ	3. 55+01	5 F	0 0 0 0	BWC003
			Chlordene p-Chlorophenylmethyl Sulfide	ננ	% o.	8 0	0 0 0 0 0 0	8VZ005 8VZ005
			b-Chlorophenylmethyl Sulfoxide	1	•5	ō	9/80	802008
				בו	, ,	ē	0/07	80208
			Chromium		1.02+01	10+	8/87	BVV013
			Copper Dibromochloropropane		9.	ģ	0/00	8VZ005
			Dibrosoch lonopropene		ņ	101	0/00	Bucoo3
			Dicyclopentadiene	1		ē	0/07	872005
			Dicyclopentadiene	֓֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	1	-01	8/8n	BWC003
			Vapona Diisopropylmethyl Phosphonate	בֿב	, .	8 6	9/90 000	6VZ005 BVZ005
			Dithiane	5	j	-0-	9/07	872005
			Dieldrin	ב	, ,	ő	7	802008
			Dimethyldisulfide	ר	6	-01	D/07	BMC003
			Endrin Ethylbenzene	כל	ri +i	; ;	0 0 0 0 0 0	6VZ005 8WC003
			À LOCAL DE LA CARRESTA DEL CARRESTA DEL CARRESTA DE LA CARRESTA DE	5	9	5.00-02	0/00	BHEO14
			Isodrin	ב	m	ő	0/00	8VZ005
			Toluene		-:	Ŗ	0/00	BUCDOS
			Methylisobutyl Ketone	ב	ņ	10-	8/80	BMC003
			Melathion	_	œ.	ō	0/00	8 V2005
			1.4-Oxathiane	1	ņ	10-	0/00	872005
			Lead		1.52+01	10+	0/00	BVV013
			Dichlorodiphenylethane		ċ	Ģ	e/en	80200
			Dichloradiphenyltrichloro- ethane	-	'n	-0-	0/07	BV2005

Chemical Sewers -- South Plants

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Rocky Mountain A	
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	Task 10
porsted	Results
Incorporated	tical Results
vices Incomponeted	Analytical Results
Ebasco Services Incomponeted	Summary of Analytical Results

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21.2-22.2

1001000W27

26.2-27.2

1001000M27

Depth (ft)

Boring Number

	2	Results	.	Units	Number
Perathion	11	o.	-01	0/00	802008
2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates	ר	Ġ	Ģ	0/07	BV200\$
Tetrachloroethene	Ľ	m	-01	8/87	8MC003
Thiodiglycol	ר	4.2	4.20+00	0/07	BV0014
Trichloroethene	ר	ĸ,	Ģ	8/8 7	BMCDD3
Ortho- & Pere-Xylene	נ	≈ 3	ó	0/00	BMC003
21nc		8.6	8.61+01	0/00	800013
1, 1, 1-Trichloroethane	ר	5	ő	0/07	BUCCOO
1,1,2-Trichloroethane	ב	ņ	-01	0/00	BMCDO4
1,1-Dichloroethane	-1	Ġ.	<u>-</u> 0	0/00	BMC004
1,2-Dichloroethene	ב	.	1 0-	0/00	BMCD04
1,2-Dichloroethane	ר	.	ē	B/8n	84C004
a-xylene	11	۲.	-0	0/05	B4C004
Aldrin		۲.	ģ	6/67	BVZ006
Arsenic	ב	V	2.50+00	0/07	BWF010
Atrezine	ב	'n	ö	0/07	80220
Bicycloheptadiene		6	Ç	0/00	BHCOOK
Benzene	ב	ε.	1 0-	0/00	BWCDO4
Carbon Tetrachloride		÷	90	0/07	BMCDD4
Codmium	ב	M.	7.36-01	8/80	8VV014
Methylene Chloride		'n	9	0/00	BMCDO
Chloroform		7.	1 0	8/8n	BHCDOK
Hexachlorocyclopentadiene	-	ė.	io-	9/90	BVZ006
Chloroscetic Acid	ב	3	3.55+01	0/00	BV0015
Chlorobenzene	1	₩,	<u>.</u>	0/00	BUCDO
Chlordane	L	ď	ô	0/00	BVZ006
p-Chlorophenyime.hyl Sulfide	LT	o.	-	0/6n	8V200 6
p-Chlorophenylmethyl Sulfoxide	ר	ń	ō	8/8 0	8V2006
p-Chlorophenylmethyl Sulfone	ב	'n	ō	0/00	80200
Chromium			1.37+01	0/00	B VV014
Copper		8	3.93+01	0/00	BVV014
Lithromorph propropane	-	*	Č		

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Rocky Mountain Arsensi Program	Chemical Sewers South Plants
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Ebasco Services Incorporated	Summary of Analytical Results
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01/27/88

Sample Units Number	09/9 BMC004	900ZA9 6/60	UB/0 BUCDOL	08/9 BVZ006		_	_	18/8 BMC004	900ZA8 0/6n	10/8 BMCD04	ug/g BWE015		_		_	902008	_		_		9002/9 0/60	902000		ue/e Bucook	US/9 BV0015	ue/e Bucook	_	ue/e BVV014	ug/g BZ1003	19/0 RZ1003	ue/e 821003	
Ŝ	•																															
•	100	Ş	-01	9	9	Ģ	-01	õ	ō	-0	5.00-02	ō	Ģ	-01	-0	Õ	2.32+01	-0	-01		-0 1	-01		Ģ	4.20+00	ō	-01	9.31+01	ō-	-01	-0	ċ
Results	, nj	-	'n	'n	- :	į	'n	ø	ĸ'n	₩.	3.	'n.	'n	'n	7.	'n	ς.	ė	٠. د		o.	ė		'n		'n	ņ	•	ņ	'n	o.	,
ě	ב	ב	ב	ר	רן	ב	ב	ב	-1	ב	נ	ב		ב	ל	11		ב	ב		-1	ר		ב	ב	1.1	LT		5	ר	1	•
Analytical Perameters	Dibromochloropropane	Dicyclopentadiene	Dicyclopentadiene	Vapona	Diisopropylmethyl Phosphonate		Dieldrin	Dimethyldisulfide	Endrin	Ethylbenzene	Mercury	Isodrin	Toluene	Methylisobutyl Ketone	Melethion	1.4.Oxathiane	Lead	Dichlorodiphenylethane	Dichlorodiphenyltrichloro-	ethene	Perethion	2-Chloro-1(2,4-Dichlorophenyl)	Vinyldiethyl Phosphates	Tetrachloroethene	Thiodigiyeel	Trichloroethene	Ortho- & Para-Xylene	Zinc	1.1.1-Trichloroethane	1,1,2-Trichloroethane	1.1-Dichloroethane	
Sample	Sol 1																												Soil			
Depth (ft)	26.2-27.2																												<u> </u>			
Boring	1001000W27						•																						1001050101			

Note: Results for some parameters may appear in more than one analytical fraction.

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Rocky Mountain Arsenal Program	Tesk 10 Chemical Severs South Plants
Ebasco Services Incorporated	Summary of Analytical Results Ta

01/27/88

Sample Results Units Aumber	LT 701 ue/e BZ1003	9.50+00 ug/g BYZ018	LT 301 ua/a 821003	301	-01 ug/g	LT 7.36-01 UB/9 BZE010	0/00	301 40/9	55+01 ug/g		1.08+01 ug/ø BZE010	4.03+01 ug/g BZE010		LT 501 ug/g BZ1003		LT 301 ug/p 821003		LT 301 ug/g 821003		LT 8.38+00 ue/e BZED10	1. +00 ue/e BZI003	4.20+00	-01 ug/a	301	1.39+02 ug/g 8ZEO10	ņ		901 ug/g	L1 301 ug/g 821004	301	LT 701 ug/g BZ1004	
Analytica. Paremeters	B-XY1ene	Arsenic	Bicycloheptadiene	Benzene	Carbon Tetrachloride	Codestum	Methylene Chloride	Chloroform	Chloroscetic Acid	Chlorobenzene	Chromium	Copper	Dibromochioropropane	Dicyclopentadiene	Dimethyldisulfide	Ethylbenzene	Mercury	Toluene	Methylisobutyl Ketone	Lead	Tetrachloroethene	Thiodialycol	Trichloroethene	Ortho- & Para-Xylene	Zinc	1,1,1-Trichlorbethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,2-Dichloroethene	1,2-Dichloroethane	n-Xylene	
Sample Type	5011																									Sofl						
Depth (ft)	8-8																									رد د ع						
Boring Number	1001020101																									1001050102						

Note: Results for some parameters may appear in more than one analytical fraction.

Ebasco Services Incorporated

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fbasco Services Incor		porated	Rocky Mountain Arsenal Program	-ogram			01/27/88
Summery of Anglytical		Results	Tosk 10 Chemical Sewers	Severa	Sol	South Plants	
Boring Number	Depth (ft)	Sample Type	Analytical Parameters	S	Results	Unita	Stemp1e Number
1001C\$0102	\$ - \$	5011	Dichlorodiphenylethane Dichlorodiphenyltrichloro-	רן	301 601	11 00/0	8ZD009 8ZD009
			Parathion 2-chloro-1(2,4-Dichlorophenyl)	ננ	401 301	11 09/0	620009 620009
			Vinyidiethyl Phosphates Tetrachloroethane	11	301	1 00/0	821004
			Thiodigized	ב	4.20+00		823005
			Trichioroethene Ortho: & Para-Xylene		301	11 UQ/Q	621004
			Zinc	i	13		625009
1001050103	5:-3	Soft	1,1,1-Trichloroethane	1	301	11 00/0	821005
			1,1,2-Trichloroethane	17			821005
			1,1-Dichloroethene	֖֖֖֖֖֖֖֖֖֖֖֖֡֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֝֡֓֓֓֡֝֡֓֡֓֡֓֓֡֓֡֡֡֡֝			621005
			1,2-Dichloroethene 1,2-Dichloroethane	בב	301	26/6	621005 621005
			BXX1656	<u>.</u>	701	100/0	821005
			Aldrin	כ	S.		62H002
			Arsenic		-		610ZA9
			Atrazine Bicycloh epta diene	בב	301	20/07	62H002 621005
			Benzaen en		301	0/00	821005
			Carbon Tetrachloride	-1			821005
			Codmium	۱.	36		BZEO11
			Chloroform			9/9/	621005 621005
				•	,		
			Mexach lonocyclopent ad lene	<u>.</u> د	5.7 -01		82H002
			Chlorogoetic Acid		3.55+01	0/00	623007 871008
			Chlordene	: -			B2H002
			p-Chlorophenylmethyl Sulfide	רו			82H002
			p-Chlorophenylmethyl Sulfoxide	-	2.5 -01	1 00/0	BZH002
			n-Chlorophenyimethyl Sulfone	ר	2.5 -01		BZH002
			Chromium		1.10+01	0/00	62E011

Note: Results for some parameters may appear in more than one analytical fraction.

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Summary of Analytical Results Fbasco Services Incorporated

Number	Depth (ft)	Sample	Analytical Peremeters	Res	Results	Unita	Sample Number
1001050103	4-5	Sof 1	Copper		3.40+01	9/80	8ZEO11
			Dibromochloropropane	11	2.8 -01	0/00	8ZH002
			Dibromochloropropane	-1	401	0/00	8ZI005
			Dicyclopentadiene	-1	_	0/00	8ZHD02
			Dicyclopentadiene	ב	301	6/6 n	821005
			Vapona	۲	3.0 +00	B/87	8ZH002
			Diisopropylmethyl Phosphonate	ב	1.1 +00	0/00	8ZH002
			Dithiane	-	3.6 -01	0/00	BZH002
			Dieldrin		4.5 -01	0/00	82H002
			Dimethyldisulfide	ב	801	0/00	62100S
			Endrin	11	4.6 -01	0/00	82H002
			Ethylbenzene	11	301	0/00	821005
			Mercury	L.1	5.00-02	0/00	82F011
			Isodrin	-1	•	0/00	52H002
			Toluene	ב	301	B/85	821005
			Methyllsobutyl Keton	נ	301	0/00	821005
			Melethion	L	_	0/00	BZH002
			1,4-0xathiane	ר		0/00	8ZH002
			Lead	ני	8.38+00	0/00	BZE011
			Dichlorodiphenylethane	ר	5.7 -01	0/07	BZHD02
			Dichlorodiphenyltrichloro-	-1	4.7 -01	0/00	BZH002
			ethane				
			Parathion	ב	8.5 -01	0/00	82H002
			2-Chloro-1(2,4-Dichlorophenyl)	ב	6.1 -01	0 00 00	B2H002
			Vinyldiethyl Phosphates			•	
			Tetrachloroethene	Ļ	301	D/07	821003
			Thiodigiycol	-	4.20+00	0/00	823007
			Trichioroethene	1	301	0/00	82100\$
			Ortho- & Fara-Xylene	1.1	301	0/00	82100\$
			Zinc		1.22+02	0/00	82E011
1001050104	4-5	Soil	1.1.1-Trichloroethans	רו	301	0/00	HZ1006
			1,1,2-Trichloroethane	ב		0/00	821006
			1,1-Dichloroethane	۲٦	901	0/00	821006
			1 2-140510000000	•		1	1000

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Rocky Mountain Arsenal Program

Chemical Sewers Couth Plants	
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Summary of Analytical Results	

Depth (1t)

Boring

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1001050104

Sample	821006 821006 82H003 8Y2020 82H003	621006 821006 821006 826012 821006	821006 82H003 821008 821006 82H003	62r00.3 B2r100.3 B2F100.3 B2F01.2 B2F01.2 B2F00.3 B2T100.6 B2T100.6 B2T100.6 B2T100.6 B2T100.6	BZH003 BZH003 BZH003 BZ1006 BZ1006 RZ1006 BZ1006 BZF012 BZF012 BZ1006
Units	0/00 0/00 0/00 0/00	00000	0 0 0 0 0	00000 00000	00000 0000
Results	LT 301 LT 701 4.4 -01 5.30+00 LT 2.5 -01	99.4.4.4.4.88.4.4.4.88.4.4.4.4.4.4.4.4.4	LT 301 LT 5.7 -01 LT 3.95+01 LT 3. +00 LT 1.7 +00	1. 2. 1 - 0. 1 -	LT 1.1 +00 LT 3.6 -01 LT 3.6 -01 LT 6.6 -01 LT 4.6 -01 LT 301 LT 2.9 -01 LT 2.9 -01
Analytical Parameters	1,2-Dichloroethane m-Xylene Aldrin Arsenic Atrazine	Ricycloheptadiene Renzene Carbon Tetrachloride Cadmium Methylene Chloride	Chloruform Hexachlorocyclopentadiene Chlorocettc Acid Chlorobenzene	p-Chlorophenylmethyl Sulfide p-Chlorophenylmethyl Sulfoxide p-Chlorophenylmethyl Sulfone Chromium Copper Dibromochloropropane Dicyclopentadiene Dicyclopentadiene Vopone	Diisopropylmethyl Phosphonate Dithiane Oisidrin Dimethildisulfide Endrin Ethylbrazene Mercury Isodrin
Sample	Soft				

Note: Results for some parameters may appear in more than one analytical fraction.

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Summary of Analytical Results

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Chemical Sewers -- South Plants

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Nimber	Depth (ft)	Lype	Analytical Parameters	å	Results	Unita	Sample Number
1001080104	6 – 5	5011	Methyllsobutyl Ketone	ב	301	0/00	821006
			Melathion	1	7.1 -01	0/00	BZH003
			1,4-0xathiane	-1	2.5 -01	0/00	BZH003
			Lead	11	8.38+00	o/on	BZE012
			Dichlorodiphenylethan	ב	5.7 -01	0/00	8ZHD03
			Dichlorodiphenyltrichloro-	נ	4.7 -01	0/60	BZHOO3
			ethane			•	
			Parathion	ב		0/00	BZHDO3
			2-Chloro-1(2,4-Dichlorophenyl)	Ľ	6.1 -01	0/00	BZHOO3
			Tetrachlonosthers				
			Thiodial you	-	· · ·	0 (0)	900179
				3	4.20+00	0/00	800679
			Inichloroethene	ב	301	0/00	821006
			Ortho- & Para-Xylene	5	301	0	821006
			Zinc		1.64+02	0/01	BZE012
1001070105	ÿ-7	Soil	1.1.1-Trichloroethane	-	. T	9/01	R71007
			1,1.2-Trichloroethane	ב		0/00	621007
			1,1-Dichloroethane	1	901	0/00	821007
			1,2-Dichloroethene	ב	301	0/00	821007
			1,2-Dichloroethane	-	301	0/00	821007
			=-X	<u>a</u>	.01	0,000	100168
			Aldrin	: =			12 TOC. /
			Artento	į	- 3	2 1	5470C#
			Atrevine	-	2 5 -01	0 (0	872021
			7		3	1	
				ڌ	on1	0/07	621007
			Benzene	L.T	301	0/00	821007
			Carbon Tetrachloride	L1	301	0/en	821007
			Cadmium	17	7.36-01	0/00	BZEO13
			Methylene Chloride	ב	701	0/00	821007
			Chloroform	ר	301	0/00	821007
			Hexachlorocyclobentadiene	-	5.7 -01	0/01	RZWOO4
			Chloroscetic Acid	, <u>-</u>	3,55+01	0/00	873000
			Chlorobenzene	1	301	0/07	871007

Note: Results for some parameters may appear in more than one analytical fraction.

Rocky Mountain Arsenal Program	10 Chemical Sewers South Plants
	Task 10
Ebasic Services Incorporated	Summary of Ant ytical Results

Denth (ft)

Boring

	Sample Number		BZH004	B2H004	BZH004	BZE013	BZE013	8ZH004	821007	82H004	621007	8ZH004	82H004	82H004	BZH004	621007	BZH004	871007	BZF013	BZH004	621007	821007	82H004	BZH004	BZE013	B2H004	BZH004	8ZH004	8ZHOU4		200179	823009	/00178	821007	62EU1 5
South Plants	Units		8/85	0/00	0/00	0/00	0/60	0/00	0/07	0/07	0/00	6/6n	06/0	0/00	0/00	0/00	0/0n	0/01	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	B/B0	0/00	0/00	-, -:	9	0/07	0 /00	0/0n	0/00
i	Results	1	9.1 -01	2.501	2.5 -01	1.33+01	3, 33+01	2.8 -01		_		3.0 +00	1.1 +00		1.5 +00		4.6 -01	5	17	2.9 -01		301	7.1 -01	2.5 -01		5.7 -01	4.7 -01	8.5 -01	6.1 -01	č	10 ·	4.20+00		301	1.16+02
Sewers	ar o		L.1	ר	רו			1.1		-	11	ב	-1	ב		ני	11	-	i	1	11	ר		-	11	רו	ר	1	נ			 	-	11	
Task 10 Chemical	Analytical Parameters	l	<pre>p-Chlorophenylmethyl Sulfide</pre>	p-Chiorophenylmethyl Sulfoxide	p-Chlorophenylmethyl Sulfone	Chromium	Copper	Dibromochioropane	Olbromochloropropane	Dicyclopentadiene	Dicyclopentadiene	Vapona	Oilsopropylmethyl Phosphonate	Dithigne	Dieldrin	Dimethyldisulfide	Endrin		ACTOCAE	Isodrin	Toluene	Methylisobutyl Katone	Melethion	1.4-Oxethiene	Lead	Dichlorodiphenylethane	Dichlorodiphenyltrichloro- ethane	Parathion	2-Chloro-1(2.4-Dichlorophenyl)	Vinyldiethyl Phosphates	intrachlorographene	Thiodigiycol		Ortho- & Para-Xylene	Z1nc
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Company Andrew Service Control

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	Sample Number	821006 821008 821008 821006 821006	821006 82H005 8Y2022 8ZH005 8ZH005	BZ1008 BZ1008 BZE014 BZ1008 BZ1008	BZH005 BZJ010 BZJ008 BZH005 BZH005	BZH005 BZH005 BZE014 BZE016 BZH005	BZ I 008 BZ H 005 BZ I 008 BZ H 005 BZ H 005
Plants	Units	00000	00000	00000	90000	00000	0 0 0 0 0
Chemical Sewers South Plants	Results	LT 301 LT 901 LT 901 LT 8101	LY 2.5 -01 LY 2.5 -01 B.21+00 LY 2.5 -01 LY 301	LT 301 LT 301 LT 7.36-01 LT 300 LT 301	LT 5.7 -01 LT 3.55+01 LT 301 LT 1.7 +00 LT 9.1 -01	LT 2.5 -01 LT 2.5 -01 1.35+01 3.22+01 LT 2.8 -01	LT 401 LT 1.1 +00 LT 301 LT 3.0 +00
Task 10 Chemical 9	Anslytical Parameters	1, 1, 1-Trichloroethane 1, 1, 2-Trichloroethane 1, 1-Dichloroethane 1, 2-Dichloroethene 1, 2-Dichloroethane	m-Xylene Aldrin Arsenic Atrazine Bicycloheptadiene	Benzene Carbon Tetrachloride Cadmium Methylene Chloride Chloroform	Hexachlorocyclopentadiene Chloroacetic Acid Chlorobenzene Chlordane p-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfoxide p-Chlorophenylmethyl Sulfone Chromium Capper Pibromochloroprane	Dibromochloropropane Dicyclopentadiene Dicyclopentadiene Vapone
sults	Sample	5011					
Analytical Re:	Depth (ft)	s- -					
Summary of Analytical Results	Bor Ing Number	1001CS0106					

82H005 82H005 82I008

0/07

3.6 -01 1.5 +00 8. -01

Dithione Dieldrin Dimethyldisulfide

Fhason Services Incorporated Summary of Analytical Results

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tone strane stra	Endrin Ethylbenzene Mercury Isodrin Toluene Methylisobutyl Keton Malathion 1,4-Oxathiane Lead Dichlorodiphenyletha Dichlorodiphenyltric ethane Ethane Dichloroethene Trichloroethene Trichloroethene Trichloroethene 1,1,1-Trichloroethane 1,1,2-Trichloroethane 1,2-Dichloroethane 1,3-Dichloroethane 1,3-Dichloroethane 1,3-Dichloroethane 1,3-Dichloroethane 1,3-Dichloroethane 1,3-Dichloroethane 1,3-Dichloroethane			Sample Setts Units Number	LT 4.6 -01 ug/g 62H005 LT 301 ug/g 621006 1.23-01 ug/g 62F014 LT 2.9 -01 ug/g 62H005 LT 301 ug/g 62I008	tone LT 301 ug/g BZ1008 LT 7.1 -01 ug/g BZH005 LT 2.5 -01 ug/g BZH005 LT 8.38+00 ug/g BZE014 thane LT 5.7 -01 ug/g BZE014		ane LT 301 ug/g LT 301 ug/g LT 901 ug/g LT 301 ug/g LT 301 ug/g	LT 2.5 -01 ug/g 821009 LT 2.5 -01 ug/g 82ND06 1.52+01 ug/g 872023 LT 2.5 -01 ug/g 82ND06 LT 301 ug/g 821009	LT 301 ug/g 8Z1009
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Ebasco Services Incorporated Summary of Analytical Results

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1001050107

Sorting Number

Chemical Sewers -- South Plants

Sample Number	8Z1009	8ZHOO6	823011	821009	82H006	8ZH006	BZH006	82HD06	82E015	BZE015	82H006	821009	82H006	6 21009	82HD06	82H006	82HD06	82H006	621009	82H006	621009	BZF015	82HD06	821009	821009	B2H006	BZH006	BZE015	8ZH006	82H006	824006	BZH006
units	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/60	0/00	0/00	0/00	0/00	0/00	0/00	6/6n	9/93	8/8n	0/0 7	0/00	0/00	0/07	0/00	0/00	0/00	0/00	0/00	0/00	0/80	0/0n	0/01	0/00
Results	301	5.7 -01	3.55+01	301	1.7 +00	9.1 -01	2.5 -01	2.5 -01	1.11+01	5.14+01	2.8 -01		_		3.0 +00	1.1 +00	3.6 -01			4.6 -01	301	2.60-01	•	301	301	7.1 -01	2.5 -01	8.38+00	5.7 -01	4.7 -01	5.5	6.1 -01
E.	בֿ	-1	-	T.1	ב	ב	_	-			ב	-1	ב	ב	-	11	L		ב	ב	1.1		ב	-1	ר	ב	נ	11	רו	<u>ר</u>	-	ב
Analytical Parameters	Chloroform	Hexach lorocyclopentadiene	Chlorometic Acid	Chlorobenzene	Chlordene	p-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfoxide	p-Chlorophenylmethyl Sulfone	Chromium	Copper	Dibromochloropropane	Dibromochloropropane	Dicyclopentadiene	Dicyclopentadiene	Vapons	Diisopropylmethyl Phosphonate	Dithiane	Dieldrin	Dimethyldisulfide	Endrin	Ethy]benzene	Mercury	Isodrin	Toluene	Methylisobutyl Ketone	Melathion	1.4-Okethiene	Lead	Dichlorodiphenylethane	Dichlorudiphenyltrichloro- ethane	Perethon	2-Chloro-1(2,4-Dichlorophenyl)
Type	5011																															
Depth (ft)	4 . 5																															

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The Committee and Committee and the Committee of the Comm

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BZM002 BZM008 BZM002

0/00

2.'6 +00 1.1 +00 6.4 -01

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Dibromochilorophopane

Dicyclopentadiene Dicyclopentadiene

Dibromochloroprop**a**ne

Chromium

B2E017 BZE017 BZH008

0/07 0/07

0/67 0/00

1.37+01 3.67+01 2.8 -01

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Rocky Mountain Arsenal Program	Chemical Sewers South Plants
	T#sk 10
Fhasco Services Incorporated	Summery of Analytical Results

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Depth (ft)	Sample Type	Analytical Parameters	Rei	Results	unit.	Sample Number
4-5	Soil	Vebone	ב	3.0 +00	0/00	BZHOOS
		Diisopropylmethyl Phosphonate	L		0/00	82H008
		Dithiane	-		8/80	82H006
		Dieldrin	ב		8/8 0	82H008
		Dimethyldisulfide	ר	2.0 +01	8/8 0	8ZM002
		Endrin	ב	4.6 -01	0/00	82H008
		Ethylbenzene	1	3.8 -01	0/00	BZM002
		Mercury	<u>.</u>	5.00-02	0/00	BZF017
		Isodrin	11	2.9 -01	0/00	BZHDOS
		Toluene	ב	2.5 -01	B/8n	BZH002
		Methyllsobutyl Ketone	5	7.3 -01	0/00	B2H002
		Malathion	נ	7.1 -01	0/00	62H008
		1.4.Oxathiane	<u>ן</u>	2.5 -01	0/00	BZH008
		Lead		1.57+01	0/00	82E017
		Dichlorodiphenylethane	11	5.7 -01	0/00	BZHOOB
		Dichlorodiphenyltrichloro-	רַ	4.7 -01	0/00	BZHOUB
			-		-/	4000
		raraction (1)	د	6.0	0	
		2-chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates	ב ב	6.1 -01	0 0 0	82H008
		Tetrachloroethene	1	2.5 -01	0/00	B2M002
		Thiodigiycol	נ	4.20+00	B/8n	82000\$
		Trichloroethene	ב	5.4 -01	0/00	B2H002
		Ortho- & Para-Xylene	<u>ر</u>	4.9 +00	0/00	B2M002
		7 inc		1.09+02	0/07	B2E017
8-9	1105	1,1,1-Trichloroethene	ר	4.3 -01	D/60	BZMOO3
		1,1,2-Trichloroethane	<u>-</u>	3.9 -01	0/00	B2M003
		1.1-Dichloroethane	נ	1.7 +00	0/00	824003
		1,2-Dichloroethene	ניו	1.7 +00	0/00	B2M003
		1,2-Dichloroethane	ב	5.6 -01	B/BN	BZM003
,		B-Xylene	-1	7.4 -01	6/60	B2M003
		Aldrin	ב	2.5 -01	0/00	82H009
		Arsenic	נו		6/60	B2N007
		Atrazine	L1	2.5 -01	0/00	BZH009

Ebasco Services Incorporated	ices Incorpo	y ated	Rocky Mountain Arsenal Program	warac.			01/27
Summary of Analytical Results	Analytical F	Results	Task 10 Chemical	Sewers	Chemical Sewers South Plants	Plants	
Boring Number	Depth (ft)	Semple Type	Analytical Parameters	, E	Results	Unit:	Semple Number
1001050108	8-9	5011	Bloycloheptadlene	5	3.6 -01	0/00	BZMOO3
			Benzene	ב' ו	2.5 -01	0/00	824003
			Carbon Tetrachloride	ב	2.5 -01	0/00	BZMOO3
			Cadmium	ב	7.36-01	0/00	82E018
			Methylene Chloride	L1	1.5 +00	8/87	8ZM003
			Chloroform	1	2.9 -01	0/00	827003
			Hexach lorocyclopentadiene	ב	5.7 -01	0/00	8ZH009
			Chloroacetic Acid	_	3,55+01	0/00	820006
			Chlorobenzene	ר,	1.5 +00	0/00	B2M003
			Chlordene	-1	1.7 +00	0/00	82HD09
			0-Chlorophenylmethyl Sulfide	-	-	0/01	BYHOO9
				- I	5 5 -01	0/07	RZH009
					2.5	0/07	8ZH009
				ì	1.28+01	0/07	BZEO18
			Copper		3.38+01	0/00	82E018
				-	2 A -01	6/641	RZHONG
			Dibrosochloropene	<u>-</u>	2.4 +00	0/00	BZMOOS
			Dicyclopentadiene	בו		0/00	8ZH009
			Dicyclopentadiene	ב		0/00	BZM003
			Vapona	ב	3.0 +00	0/00	8ZH009
			Diisopropylmethyl Phosphonate	5	1.1 +00	0/00	8ZH009
			Dithiane	_		0/00	BZH009
			Dieldrin	-		0/00	8ZH009
			Dimethyldisulfide	-		0/00	BZM003
			Endrin	-	4.6 -01	0/07	82H009
			Ethylbenzene	1	3.8 -01	0/07	BZM003
			Mercury	٦	5.00-02	0/00	82F018
			Isodrin	ב	2.9 -01	0/07	62H009
			Toluene		2.5 -01	0/05	BZM003
			Methylisobutyl Ketone	ר	7.3 -01	0/07	B2M003
			Malathion	1.1	7.1 -01	0/00	B2H009
			1,4-0xathiane	-1	2.5 -01	0/00	82H009
			Lead	-1	8.38+00	e/en	82E018
			Dichlorodiphenylethane	-	5.7 -01	0/07	B2H009

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Summary of Analytical Results

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Rocky Mountain Arsenal Frogram

Chemical Sewers -- South Plants

Semple Results Units Number	LT 4.7 -01 ug/o BZH009	2.8 +00 ue/e 4.20+00 ue/e	LT 5.4 -01 ug/g BZM003 LT 4.9 +00 ug/g BZM003 1.10+02 ug/g BZE018	LT 4.3 -01 ug/g BZMO04 LT 3.9 -01 ug/g BZMO04 LT 1.7 +00 ug/g BZMO04 LT 1.7 +00 ug/g BZMO04 LT 5.6 -01 ug/g BZMO04	LT 7.4 -01 ug/g BZM004 LT 3.0 -01 ug/g BZL002 LT 5.0 +00 ug/g BZN008 LT 3.0 -01 ug/g BZL002 LT 3.6 -01 ug/g BZM004	LT 2.5 -01 U@/9 BZMOO4 LT 2.5 -01 U@/9 BZMOO4 LT 7.36-01 U@/9 BZE019 LT 1.5 +00 U@/9 BZMOO4 LT 2.9 -01 U@/9 BZMOO4	LT 6.0 -01 ug/g BZL002 LT 3.55+01 ug/g BZ0007 LT 1.5 +00 ug/g BZH004 LT 2.0 +00 ug/g BZL002 LT 9.0 -01 ug/g BZL002	LT 3.0 -01 uw/o BZL002 LT 3.0 -01 us/o BZL002 1.30+01 us/o BZE019
Analytical Parameters	Dichlorodiphenyltrichloro- ethane Parathlon	Vinyldiethyl Phosphates Vinyldiethyl Phosphates Tetrachloroethene Thiodialycol	Trichloroethene Ontho- & Para-Xylene Zinc	1,1,1-Trichloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane	m-Xylene Aldrin Araenic Atrazine Bicycloheptadiene	Benzene Carbon Tetrachloride Cadmium Methylene Chloride Chloroform	Hexachl. ocyclopentadiene Chloromeetic Acid Chlorobenzene Chloromee p-Chloromeenylmethyl Sulfide	p.Chlorophenylmethyl Sulfoxide p-Chlorophenylmethyl Sulfone Chromium
Samele	5011			Soi 1				
Depth (ft)	6			14-15				
Boring Number	1001CS0108			1001050108				

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Fbasco Service	ires incorporated	ated	Rocky Mountain Arsenal Program	Logram			01/22/10
Summary of	Summary of Analytical Results	sults	Task 10 Chemical Sewers	Sewers		South Plants	
Boring	Depth (ft)	Sample Type	Analytical Parameters	Results	lts	Unita	Semble Number
1001050109	1 1	\$011	m-Xylene Aldrin Arsenic Atrezine	LT 7 LT 3 LT 5	7.4 -01 3.0 -01 5.0 +00 3.0 -01	6/6n 6/6n	82M005 82L003 82N009 82L003
			Bicycloheptadiene		.6 -01	0/80	BZM005
			Benzene Carbon Latrachloride	רב זיי	2.5 -01	0/05	BZM005
						0/05	82000\$
			Methylene Chloride Chloroform	רן ה	1.5 +00 2.9 -01	0 0 0 0 0 0	62M005 62M005
					ć	-/-:	
			Chloroscetic Acid	מיים ב" ב	3.55+01))))	820008
			Chlorobenzene		.5 +00	0/00	BZMOOS
				L1 2	2.0 +00	0/0n	82L003
			p-Chlorophenylmethyl Sulfide		.0 -01	0/00	B2L003
						0/00	82L003
			phenylmethyl			0/00	BZLOO3
			Chromium	L1 8		0/0n	820008
			Copper Dibromochloropropane	L1	2.9 +01 3.0 -01	0 0 0 0 0 0 0 0	620005 BZL003
			Otherwise I decorate		00+ 40	0/07	RZHONE
						0/07	B2L003
			Dicyclopentadiene			0/00	BZMOOS
			Vapona			0/07	BZL003
			Diisopropylmethyl Phosphonate		00+ 0.	0/00	82L003
			Dithiane		4.0 -01	0/00	62L003
			Dieldrin			0/00	BZL003
			Dimethyldisulfide			0/0n	BZMO05
			Engrin Ethylbenzene		3.8 -01	0/07	82H005
			Mercury		5.00-02	9,0	62P005
			Isodrin			0/07	52L003
			Toluene setting 2 744 (Set	- L	2.5 -01	0/07	82M005
			TOTAL TROOPERT VALORIA			>	מיייים מייי

1001050109

Boring

nalytical Results	sults	lask 10 Chemical	Chemical Sewers Sout	South Plants	
Depth (ft)	Sample Type	Analytical Parameters	Results	Units	Sample Number
5-3	Soft	Malathion	1.1 7.0 -01	0/67	BZL 003
	! !	1,4-Oxathiane	3.0	_	821003
		Lead			820005
		Dichlorodiphenylethane	6.0		821003
		Dichlorodiphenyltrichloro- ethane	LT 5.0 -01	0/00	82L003
		Parathion	10-0-01	מס/מח	821.003
		2-Chloro-1(2,4-Dichlorophenyl)	6.0		BZL003
		Vinyldiethyl Phosphates) ;		
		Tetrachloroethene		0/00	BZM005
		Thiodiglycol			820008
		Trichloroethene	LT 5.4 -01	0/00	BZMOOS
		Ortho- & Para-Xylene	LT 4.9 +00	0/00	827005
		Zinc	8.6		82000\$
∂ €	5011	1, 1, 1-Trichloroethane	LT 4.3 -01	0/07	824006
		1.1.2-Trichloroethene	6.0	_	824006
		1,1-Dichloroethane	1.7		82M006
		1,2-Dichlaroethene			82M006
		1,2-Dichloroethane	LT 5.6 -01	0/00	BZH006
		S-X×1000	LT 7.4 -01	0/00	824006
		Aldrin	3.0		821.004
		Arsenic	5.0	_	BZNO10
		Atrazine	17 3.0 -01	0/00	82L004
		Bicycloheptadiene		0/07	BZM006
		Benzene	LT 2.5 -01	0/00	8ZM006
		Carbon Tetrachloride	2.5		82M006
		Cadmium		-	820006
		Methylene Chloride	LT 1.5 +00		B2M006
		Chloroform		0/00	BZM006
		Mexachlomocyclopentadiene	LT 6.0 -01	0/00	821.004
		Chloroscetic Acid		0/00	820009
		Chlorobenzene		-	824006
		Chlordane	2.0	0/00	BZ1.004
		p-Chlorophenylmethyl Sulfide	LT 9.0 -01	0/Bn	82100¢

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Libesco Services	ices incomporated	ated	Rocky Mountain Arsenal Program	meneor		01/27/88
Summary of Analy	Analytical Results	sant ts	Task 10 Chemical	Sewers	South Plants	
Boring	Depth (ft)	Sample Type	Analytical Parameters	Results	Units	Sample Number
10010\$0109	8-9	Soft		3.0		BZL.004
			p-Chlorophenylmethyl Sulfone Chromium		-01 ug/o	82L004 820006
			Copper	3.1		820006
			Dibromochlaropropane		-01 ug/g	82L004
			Dibromochlaropropene	2.4	e/en 00+	BZM006
			Dicyclopentadiene	1.0	#00 ng/a	B2L004
			Dicyclopentadiene	4.9		82M006
			Vapone Diisopropylmethyl Phosphonate	L1 3.0 ±	0/6n 00+	82L004 82L004
				:		
			Dithimne			BZL004
			Dieldrin	0, O		B21.004
			Dimethyldisulfide	9.0		82M006
			Endrin Ethylbenzene	L 4.9.0	0/00 10-	62M006
				1 1 5 00-02	9/911 - دا	RZPOOK
			Tenderin			12 OO 12 OO
				, c		82M004
			Methylisobuty) Ketone			82M006
			Malathion	7.0		8ZL004
			1.4.0xath(ane		-01 119/8	871.004
				1.3		620006
			Dichlorodipheny lethane	0.9		821004
			Dichlorodiphenyltrichloro-		-01 ug/g	BZL004
			ethane Parathion	LT 9.0 -	-01 09/9	821.004
			2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Photobates	LT 6.0 -	-01 uo/o	82L004
			Tetrachloroethene	17 2.5 -	-01 ua/a	8214006
			Thiodialycol	4.20		620009
			Trichloroethene			82M006
			Ortho- & Para-Xylene			BZM006
			7 inc	7.6 +1	+01 ug/a	820006
1001050109	13-14	Soil	1,1,1-Trichloroethane	LT 4.3 -	-01 ug/g	B2M007

Note: Results for some parameters may appear in more than one analytical fraction.

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Summery of Analytical

1001050109

Boring

Depth (ft)	Sample	Analytical Parameters	Results	it s	Units	Sample Number
					6/011	R 2MCO 2
1.5-14	5011	1, 1, Z-IFIChioroethane) (100M28
		1.1-Dichloroethene			9	100m20
		1,2-Dichloroethene			0/00	82M007
		1,2-Dichloroethane			0/00	B2M007
		m-Xylene	LT 2	7.4 -01	0/00	B2M007
		Aldrida attack		3.0 -01	0/00/	821.005
			- F		0/07	62NO11
		Atrastos			0/00	BZL 005
		Bicycloheptadiene			0/00	BZM007
		Benzene	7		0/00	82M007
		Carbon Tetrachloride	11 2	2.5 -01	0/80	BZM007
					0/00	820007
		Methylene Chloride			0/00	BZM007
		Chloroform			0/00	62M007
		Hexachlorocyclopentadiene	17		0/00	821005
		Chlorogetto Acto		3.55+01	0/80	620010
		Chlorobenzene	LT	1.5 +00	0/00	B2M007
		Chlordane		2.0 +00	0/00	82LU05
		p-Chlorophenyimethyl Sulfide	LT 9	9.0 -01	0/00	821005
				3.0 -01	0/00	821.005
		b-Chlorophenylmethyl Sulfone		3.0 -01	0/00	821.005
			L1 5	5.2 +00	0/00	820007
		Copper	E)	3.0 +01	0/07	820007
		Dibromochloropropene	LT	3.0 -01	0/00	82L005
		Dibromochloropropane		2.4 +00	0/0n	82M007
		Dievelopentadiene	רו	1.0 +00	0/60	B21.005
		Dicyclopentadiene			0/00	BZM007
		V 000000	L1 3	3.0 +00	0/00	821005
		Dilappropylmethyl Phosphonate		1.0 +00	0/00	821005
		Dithiane	ر د	4.0 -01	0/00	821005
			L1 3	3.0 -01	0/00	821.005
		Dissipation and finds			0/00	82M007
		Endrin			0/00	821005
		Ethy benzene			0/60	82M007

Summery of Analyt Boring Number Dept 1001CS0109 13-	tical Results	uit ts	Tesk 10 Chemical Severs	1	South Plants	
2 '						
	th (ft)	Sample	Analytical Parameters	Results	Units	Sample Number
	13-14	5011	Y L CO L C	LT 5.00-02	0/00	B2F007
			Isodrin		0/00	821.005
			Toluene	2.5	0/00	82M007
			Methylisobutyl Ketone	LT 7.3 -01	0/00	62M007
			Malathion		0/00	BZCOOS
			1,4-Oxethiene		0/00	B2L005
			Lend		0/00	820007
			Dichlorodiphenylethane	6.0	0/00	B2L005
			Dichlorodiphenyltrichloro-	LT 5.0 -01	8/07	82L005
			ethane Parathion	LT 9.0 -01	0/00	BZL005
				,	-,	i
			V-thiofo-1(X,e-Dichlorophenyl)	0.0 -01	0/00	600779
			Tetrachloroethene	LT 2.5 -01	0/00	62M007
			Thiodigiycol	4.2	0/00	BZ0010
			Trichloroethene	LT 5.4 -01	0/00	BZM007
			Ortho- & Para-Xylene	L7 4.9 +00	0/0n	BZH007
			Zinc	7.3 +01	0/00	620007
1001050109 18	18-19	Soil	1,1,1- ichloroethane	4.3	0/00	BZM008
			1,1,2-Trichloroethane		0/00	8211008
			1,1-Dichloroethane	1.7	0/00	82M008
			1,2-Dichlaroethene	1.7	0/00	82M008
			1.2-Dichloroethane	LT 5.6 -01	0/00	82M008
			B-Xylene		0/00	BZMUOB
			Aldrin		0/00	B2L006
			Arsenic	5.0	0/00	BZN012
			Atrazine	0	B/87	821.006
			Bicyclohentadiene	LT 3.6 -01	0/00	BZMOOS
			Benzene	LT 2.5 -01	0/00	82M008
			Carbon Intrachloride	LT 2.5 -01	0/BN	BZMOCB
			Codmitte	LT 6.6 -01	0/00	820008
			Methylene Chloride	L.T 1.5 +00	0/00	BZMOOB
			Chloroform		0/00	8211008

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Ebasco Serv	Ebasco Services Incorporated	De 1E	Rocky Mountain Arsenal Program	Codram			01/27
Summery of	Summery of Analytical Results	salts	Task 10 Chemical	Sec. 2	Chemical Sewers South Plants	Plant 4	
Boring	Depth (ft)	Sample Type	Analytical Parameters	<u> </u>	Results	Units	Semple Number
1001030109	18-19	Soft	Hexach lorocon losestadiese	-	10-0-4	0/01	821 DO
						0/0::	20011
				֓֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֡֝֓֓֓֡֡֡֡֓֡֓֡֡֡֓֓֡֡֡֡֡֡	3.33401	9 (9)	110020
			Chlordane	<u> </u>	2.0 +00	0/07	BZL 006
			p-Chlorophenylmethyl Sulfide	בֿו	9.0 -01	B/8n	82L006
				•	6	7,50	i i
				֓֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֡֡֡֓֓֓֓֓֡֡֡֡֓֓֓֡֡֡֡	7		921.004
			Chromium	3		D () ()	97000
						200	870008
			Dibrosochloropropene	1	3.0 -01	0 0 0 0	82L006
				i			
			Oibromochloropropane	1		0/00	BZMOOB
			Dicyclopentadiene	ב	1.0 +00	0/00	B 2L006
			Dicyclopentadiene	ב	6.4 -01	0/00	BZMOO8
			Vapona	-		0/00	BZL.006
			Diisopropylmethyl Phosphonate	L1	1.0 +00	0/00	BZL006
			Dithiane	1	4.0 -01	0/00	8ZL006
			Dieldrin	-		0/80	82L006
			Dimethyldisulfide	-1		0/00	BZM008
			Endrin	ב		0/00	B2L006
			Ethy Ibenzene	ב	3.8 -01	0/00	82M008
			Mencury	1	5.00-02	0/00	827008
			Isodrin		3.001	0/00	821.006
			Toluene	נ	2.5 -01	0/07	82M008
			Methylisobutyl Ketone	-		0/00	BZHOOB
			Melathion	L1	7.0 -01	0/00	82L006
			1.4-0xathiane	ב	3.0 -01	0/00	82L006
			Lead	-		0/00	820008
			Dichlorodiphenylethane	-1		0/00	8ZL006
			Dichlorodiphenyltrichloro-	נ	5.0 -01	0/07	82L006
			ethane				
			Parathion	ר	9.0 -01	0/00	82L006
			2-Chloro-1(2,4-Dichlorophenyl)	LT	6.0 -01	0/00	82L006
			Vinyidiethyl Phosphates				
			Tetrachloroethene	<u>-</u>	2.5 -01	0/00	82M008

Note: Results for some parameters may appear in more than one analytical fraction.

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Rocky Mountain Arsens! Program	Task 10 Chemical Sewers South Plants
Ebesco Services Incorporated	Summery of Analytical Results

Roring

1001050109

01/27/88

Sample Number	820011 82M008 82M008	BZR002 BZR002 BZR002 BZR002 BZR002	BZR002 BZL007 BZN013 BZL007 BZR002	BZR002 BZR002 BZR009 BZR002 6ZR002	621.007 620012 620002 62R002 82L007	BZL007 BZC007 BZ0009 BZC009	BZR002 BZL007 BZR002 BZL007 BZL007
Unit.	0/00	00000	00000	00000	00000	00000	00000
Results	6.20+00 5.4 -01 6.9 +00		3.0 -01 3.0 -01 5.0 +00 3.0 -01 3.6 -01	2.5 -01 2.5 -01 6.6 -01 1.5 +00 2.9 -01	8.55+01 1.5+00 2.0+00 9.0-01	3.0 -01 3.0 -01 3.0 +00 3.0 +01	2.4 +00 1.0 +00 6.4 -01 3.0 +00 1.0 +00
e [נננ	לבבל	ללללל	ממממ		•	55555
Analytical Parameters	Thiodiglycol Trichloroethene Ortho- & Para-Xylene	1,1,1-Trichloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane	m-Xylene Aldrin Arsenic Atrazine Bicycloheptadiene	Benzene Carbon Tetrachloride Cadmium Methylene Chloride Chloroform	Hexachlorocyclopentadiene Chloroscetic Acid Chlorobenzene Chlordene p-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfoxide p-Chlorophenylmethyl Sulfone Chromium Copper Dibromochloropropane	Dibromochloropropane Dicyclopentadiene Dicyclopentadiene Vapone Uilsopropylmethyl Phosphonate
Sample	5011	5011					
Depth (ft)	18-19	22-23					

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Ebasco Servi	Ebasco Services Incorporated	ated	Rocky Mountain Arsenal Program	ogram		01/27,
Summary of A	Summary of Analytical Results	sults	Task 10 Chemical	Chemical Severs South Plants	h Plants	
Boring Number	Depth (ft)	Sample Type	Analytical Parameters	Results	Units	Samp Le Number
1001030109	22-23	5011	Dithiane Dieldrin Dieserin	4 % C	0/00	BZL 007 8ZL 007
			Cimetry Ideason Inde Endrin Ethylbenzene	LT 5.0 -01 LT 5.0 -01 LT 3.9 -01	0 0 0	82R002 82L007 82R002
			Mercury	5.00	_	B2P009
			Isodrin Toluene	LT 3.0 -01 LT 2.5 -01	0/07	8ZL007 8ZR002
			Methylisobutyl Ketone Malethion	(T 7.3 -01)	0/00 0/00	82R002 82L007
			1,4-Oxathiane	LT 3.0 -01	0/00	B2L007
			Lead Manage Annual Carrest	1.3	0/00	820009
			Dichlorodiphenyltrichloro-	LT 5.0 -01	0 0	62L007
			ethane Parathion			82L007
			2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates	LT 6.0 -01	6/60	82L007
			Tetrachloroethene		0/80	B2R002
			Thiodiglycol			620012
			ortho- & Para-Xylene	LT 4.9 +00	0/	BZR002
			71nc	7.3 +01	0/00	820009
1001050110	m	Soi 1	Aldrin	LT 2.5 -01	0/00	B2H007
			Aruenio	1.3 +01	0/00	BZNOOS
					0/07	BZHOU/ RZF016
			Hexachlorocyclopentadiene	LT 5.7 -U1	0/00	8ZH007
			Chloroscetic Acid		0/00	623012
			Chlordane		0/00	BZH007
					0/0n	82H007
			p-Chlorophenylmethyl Sulfoxide p-Chlorophenylmethyl Sulfone	LT 2.5 -01	0/00	82H007
				;		2001

Ebasco Services Incorporated	atri	Rocky Mountain Arsenal Program	ogram			01/27/88
Summary of Analytical Results	sults	Task 10 Chemical Sewers	;	South Flants	lonts	
Depth (ft)	Sample Type	Analytical Perameters	Results		Units	Sample Number
1001C50110 3	5041	Chromium Copper Dibromochloropropane Litoyclopentadiene Vapona	6.38 3.49 LT 2.8 LT 1.1	100000	0/000	BZE016 BZE016 BZH007 BZH007 BZH007
		Dilsopropylmethyl Phosphonate Dithiane Dieldrin Endrin Mercury	LT 11.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	001000	00000	82H007 82H007 82H007 82H007 82H007
		Isodrin Melathion 1.4-Oxathiene Lead Dichlorodiphenylethane Dichlorodiphenyltrichloro- ethane Perathion 2-Chloro-1(2.4-Dichlorophenyl) Vinyldiethyl Phosphates		000000000000000000000000000000000000000	000000000000000000000000000000000000000	BZHOO7 BZHOO7 BZHOO7 6ZE016 BZHOO7 BZHOO7 BZHOO7
1001650111 4-5	5011	Thiodiglycol Zinc Aldrin Atrazine Hexacilorocyclopentadiene Chloroacetic Acid	LT 4.20 B.23 LT 3.0 LT 6.0 LT 3.55 LT 3.55	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	BZE016 BZE016 CAM002 CAM002 CAM002 CAM002
		p-Chlorophenylmethyl Sulfide p-Chlorophenylmethyl Sulfoxide p-Chlorophenylmethyl Sulfone Dibromochloropropane Dicyclopentadiene	2.6 2.7 3.0 2.7 3.0 4.1 5.0 6.1 7.1 6.0 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1	0 001 001 001 001	000000	CAMDD2 CAMDD2 CAMDD2 CAMDD2 CAMDD2 CAMDD2

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Summery of Analytical Results

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Chemical Sewers -- South Plants

	Type	Analytical Parameters	ž	Results	Unita	Sample Number	
6−5	Sofi	Diisopropylmethyl Phosphonate	5	1.0 +00	0/00	CAMD02	
		Dithiane	ני		0/00	CAMD02	
		Dieldrin			0/00	CAM002	
		Endrin	ב	5.0 -01	0/00	CAMO02	
		Isodrin	ר	3.0 -01	0/00	CAMBB2	
		Melathion	17	7.0 -01	0/00	CAMOD2	
		1.4-0xathiane			0/80	CAMO02	
		Dichlorodipheny lethane	ב		0/00	CAMO02	
		Dichlorodiphenyltrichloro-	רו	5.0 -01	a/an	CAMO02	
		ettere paratta	-	6	0/01	CAMOOS	
			j				
		2-Chloro-1(2,4-Dichlorophenyl)	ב	6.0 -01	0/00	CAMD02	
		Vinyidiethyi rhosphates Thiodiglycol	ב	4.20+00	0/00	CAK010	
8.8.8	Soft	1.1.1-Trichloroethane	5	4.3 -01	0/00	BZROOS	
;	, !	1.1.2-Trichloroethane	בי ו			BZR005	
		1,1-Dichloroethane	-			82R005	
		1,2-Dichloroethene	ר	1.7 +00	0/00	BZR005	
		1,2-Dichloroethane	ב	5.6 -01	0/00	BZR005	
		=-X×1.e.c.		3.0 +03	0/00	82R005	
		Aldrin		4.8 +02	0/00	8ZL010	
		Arsenic		8.0 +01	0/00	BZNO16	
		Atrazine	-1	3.0	0/00	821010	
		Bicycloheptadiene		2.0 +01	0/00	82R005	
		Benzene	1	2.5 -01	0/00	BZROOS	
		Carbon Tetrachloride		9.0 +01	0/00	BZROOS	
		Codmitum	1		0/00	620012	
		Methylene Chloride	_	1.5 +00	0/07	82R005	
		Chloroform		4.3 +01	0/00	62R005	
		Hexachlorocyclopentadiene		5.4 +02	0/00	821010	
		Chlorogeetic Acid	11	3.55		821007	
		Chlorobenzene		2.1 +01	0/00	BZRD05	
		Chlordane	ב	2.0 +00	0/00	621.010	
		p-Chlorophenylmethyl Sulfide	1		0/00	BZL010	

Ebasco Services	ices incorporated	ated	Rocky Mountain Arsenal Program	Cogram		01/27/88
Summary of	Summary of Analytical Results	sults	Task 10 Chemical Sewers	i	South Plants	
Boring	Depth (ft)	Sample	Analytical Parameters	Results	Units	Sample Number
1001050201	7.8-8.8	3011	B-Chlorophenylmethyl Sulfoxide		0/00	BZL010
			-		0/00	BZL010
			Chromium		8/80	B20012
			copper Dibromochloropropane	1.6 +01	0/00 (0/00)	820012 82L010
					-/	
				11 100	0/00	57KD03
			Dicyclopentadiene	. 4	0 0	BZEO15
			Vapone	3.0	0/07	821.010
			Dilsopropylmethyl Phosphonate		0/00	BZLO10
			Dithiane	LT 4.0 -01	9/07	871.010
			Dieldrin	5.4	0/00	BZL010
			Dimethyldisulfide	2.0	0/00	BZR005
			Endrin	5.0	0/00	BZLD10
			Ethylbenzene	LT 3.8 ~01	0/00	BZROOS
			Zeroniz	5.10-01	0/00	82P012
			Isodrin	6.7 +01	0/00	BZL010
			Toluene		0/00	BZROOS
			Methylisobutyl Ketone	7.3	0/00	82R005
			Malathion	LT 7.0 -01	0/00	821.010
			1.4-Oxathiane	10-01	0/00	821.010
			Lead	7.9	0/00	820012
			Dichlorodiphenylethane	6.0	0/00	8ZL010
			Dichlorodiphenyltrichloro-	10-0.8	B/07	BZL010
			ethana Parathion	LT 9.0 -01	0/00	BZLO10
			2-Chloro-1(2,4-Dichlorophenyl)	LT 6.0 -01	0/00	821010
			Vinyldiethyl Phosphates			
			Tetrachloroethene		ø/øn	BZROOS
			Triodigiycol	3	0/07	82T007
			ortho- & Para-Xylene	LT 4.9 +00	0/07	BZR005
			Zinc	2.6 +01	0/00	820012
0000001001	9				,,,,,	7000
Tollicons or				3	200	82KU06

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Rocky Mountain Arsenal Program	themical Sewers South Plents
	Task 10
Fbasco Services Indoporated	Summary of Analytical Results

Depth (ft)

Boring

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Sample Number	BZR006	BZROO6	BZR006	BZR006	BZR006	825002	RZM017	875002	BZR006	BZR006	BZR006	820013	BZR006	BZR006	825002	821008	B. R006	825002	B75002	825002	BZS002	820013	BZ0013	BZR006	825002	82R006	B25002	BZ 5002	BZS002	200228	BZS002	B2R006	625002	82R006
Units	6/60	0/00	0/00	0/00	s/en	0/00	0/01	0/01	0/07	0/00	0/00	0/00	0/00	6/6n	ø/øn	0/00	0/00	0/00	0/60	0/00	0/00	0/00	0/07	0/00	0/00	0/00	0/60	0/00	0/00	0/00	0/00	0/00	0/00	0/00
Results	3.9 -01				2.7 +00	2. +04	_	; ,	4	2.5	1.0 +02	1.3 +00		2.7 +01	2. +03	3.55+01	1.5 +00	'n	2.	4. +04	3. +03	1.3 +01	3.2 +01	5.1 +03	6. +03	6.4 -01	2. +03		2. +03	4. +04	2. +03			
e	1	11	1	ר				-	j	1.1			11		LT	נ	-	ב	רז		17					11	1.1	17		ן.	11	ן. ד	-	רב
Analytical Parameters	1,1,2-Irichloroethane	1, 1-Dichloroethane	1,2-Dichloroethene	1,2-Dichloroethane	a-Xylene	Aldrin		A+130.10	Bicycloheptadiene	Benzene	Carbon Tetrachloride	Cadmium	Methylene Chloride	Chloroform	Mexachlorocyclopentadiene	Chloroscetic Acid	Chlorobenzene	Chlordene	p-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfoxide	p-Chlorophenylmethyl Sulfone	Chromium	Copper	Dibromochloropropane	Dibromochloropropane	Dicyclopentadiene	Dicyclopentadiene	Vapona	Diisopropylmethyl Phosphonate	Dithiane	Ofeldrin	Dimethyldisulfide	Endrin	Ethylbenzene
Sample	Sof 1																																	

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BZROOS

BZROO3

0/00 0/00 0/07 0/00 0/00 0/00 0/00 8/80 0/00 9/05 0/05 0/00 0/00 0/00 0/00 0000 0/05 9/95 0/05 0/00 0/05 9/97 0/00 0/00 9/97 0/00 0/00 1.7 +00 1.7 +00 5.6 -01 6.4 +01 6.6 -01 1.5 +00 1.6 +01 1.9 +02 ÷03 +03 +03 ÷03 +03 -01 -01 10-10-**†** 0 Ş 4.20+00 4.9 +00 +03 9.9 +01 **†**07 -01 4.45-01 2.7 +01 5.4 -01 9.4 -01 Note: Results for some parameters may appear in more than one analytical fraction. Results 7.3 4.3 2.5 ان الع 1.3 3.9 ď. בבב בו בב בב ۲ Ļ ٦ ٦ ۲ ٥ ٦ 5 2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates Dichlorodiphenylethane Dichlorodiphenyltrichloro-Analytical Parameters 1,1,2-Trichloroethane Methylisobutyl Ketone 1.1.1-Trichloroethane Ortho- & Para-Xylene Carbon Tetrachloride 1,1-Dichloroethane 1,2-Dichloroethene Methylene Chloride Chloroform Tetrachloroethene Bicycloheptadiene Trichloroethene 1,4-0xathiane Thiodiglycol Perethion Melathion m-Xylene Atrez ine Mercury Isodrin Cadmium Arsento Benzene Toluene Aldrin Sample [ype 5011 5011 Depth (ft) 7.8-8.8 7.8-8.8 1001050203 1001050202 Boring NUMBER

BZR003 BZR003 BZR003

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-- South Plents

Chemical Sewers

Task 10

Summary of Analytical Results

Ebasco Services Incorporated

Rocky Mountain Arsenal Program

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Rocky Mountain Arsenal Program	Chemical Sewers South Plants
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Fhasco Services incorporated	Summary of Analytical Results

Depth (ft)

Boring

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e .	9 0	92	03	80	8	8	80	10	10	9 0	03	90	03	90	80	80	80	03	80	03	10	80	03	03	9 0	80	10	90	80	•	5	80	•	203
Sample Number	82L008	821005	B2R003	BZL.008	821008	821008	B21,008	820010	820010	821008	BZROO3	B21,008	BZRCO3	BZLOOS	821008	82L008	821.008	BZROO3	821 008	BZROO3	BZP010	RZL008	BZROO3	BZROOS	82L008	821.008	820010	821 008	821008	;	900729	821008		BZROO3
Units	0/60	0/00	0/00	0/00	0/00	0/6n	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/87	0/00	0/00	0/00	0/00	0/0 0	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/07	-/	B /0	0/60	,	0/60
Results	4.8 +01	3.55+01		1.7 +00	9.1 -01	2.5 -01	6		1.6 +01	2.8 -01	4.6 +03	1.1 +00	6.4 -01	3.0 +00	1.1 +00	3.6 -01	5.6 +00	2.0 +01	4.6 -01	3.8 -01	4.40-01	2.4 +01	9.2 +01	7.3 -01	7.1 -01	2.5 -01	5.9 +01	5.7 -01	4.7 -01		8.5 -01	6.1 -01		1.4 +01
R		ב	רו	11	כ	-	7	֡֡֡֡֡֡		1		ב	-1	1	LI	11		ב	ב	۲				5	11	17		רי	וו	-	-	LT		
Analytical Peremeters	Mexachlorocyclopentadiene	Chloroscetic Acid	Chlorobenzene	Chlordene	D-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfoxide			Copper	Dibromochicropropene	Dibromochloropropane	Dicyclopentadiene	Dicyclopentadiene	Vapona	Diisopropylmethyl Phosphonate	Dithiane	Dieldrin	Dimethyldisulfide	Endrin	Ethylbenzene	五色にのコング	Isodrin	Toluene	Methylisobutyl Ketone	Malathion	1,4-0xathiane	Lead	Dichlorodiphenylethans	Dichlorodiphenyltrichloro-		rerethion	2-Chloro-1(2,4-Dichlorophenyl)	Vinyldiethy! Phosphates	[etrach]oroethene
Sample	Soil																																	

Ebasco Serv	Ebasco Services Incorporated	ated	Rocky Mountain Arsenal Program	rogram		01/27
Summary of	Summery of Analytical Results	aults	fask 10 Chemical	Chemical Severs South Plants	lants	
Boring	Depth (ft)	Sample	Analytical Parameters	Results	Units	Sample Number
1001050203	7.8-8.8	5011	Thiodiglycol Irichloroethene Ortho- & Para-Xylene Zinc	LT 6.20+00 LT 5.4 -01 LT 4.9 +00 3.2 +01	0/000	62 T 005 62 R 003 62 R 003 62 001 0
10010 50204	7.0-6.8	Sofi	1,1,1-Trichloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,2-Dichloroethene 1,2-Dichloroethane	LT 6.3 -01 LT 3.9 -01 LT 1.7 +00 LT 1.7 +00 LT 5.6 -01	00000	82R004 82R004 82R004 82R004 82R004
			m-xvlene Aldrin Arsenic Atrezine Bicycloheptediene	2.1 +00 1.1 +03 1.2 +01 LT 2.5 -01 8.8 +00	00000	62R004 62L009 62N615 62L009 62R004
			Benzene Carbon Tetrachloride Cadmium Methylene Chloride Chloroform	LT 2.5 -01 1.6 +01 LT 6.6 -01 LT 1.5 +00 2.6 +00	00000	82R004 82R004 820011 82R004 82R004
			Hexachlorocyclopentadiene Chlorosetic Acid Chlorobenzene Chlordane	1.2 +02 LT 3.55+01 2.0 +00 LT 1.7 +00 LT 9.1 -01	00000	82L009 82T006 82R004 82L009
			p-Chlorophenyimethyl Sulfoxide p-Chlorophenyimethyl Sulfone Chromium Copper Dibromochloropropene	LT 2.5 -01 LT 2.5 -01 8.3 +00 2.4 +01 LT 2.8 -01	00000	BZL009 BZL009 BZ0011 BZ0011

BZR004 BZL009 BZR004 BZL009

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3 +03 8.4 +00 6.4 -01 3.0 +00 1.1 +00

Dibromachloropropane
Dicyclopentadiene
Ofcyclopentadiene
Vapona
Dilsopropylmethyl Phosphonate

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Note: Results for some parameters may appear in more than one analytical fraction.

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Chemical Sewers -- South Plants

Bortos	Depth (ft)	Sample	Analytical Parameters	Results	ا د ا	Units	Semple Number	
1001050204	eò.	5011	Dithiane		-01	0/61	82L009	
			Dieldrin	6.5	+91	0/6n	821.009	
			Dimethyldisulfide	2.0	ō,	0/00	BZR004	
			Endrin	Ŷ.	-01	B/BN	B2L009	
			Ethylbenzene	LT 3.8 -	-oı	0/00	BZR004	
			Mercury	1.89-01	Ö	0/00	B2P011	
			Isodrin	1.5 +	+05	0/00	82L009	
			Toluene	5.2 +	+01	0/00	B2R004	
			Methylisobutyl Ketone	7.3	-01	8/8n	B2R004	
			Malathion	LT 7.1 -	٠Ō	0/00	82r009	
			1.4-Oxathiane		-01	0/00	BZL009	
			Lead	1.3	+01 10+	0/00	820011	
			Dichlorodiphenylethane	5.7	<u>-</u> 0	0/00	BZL 009	
			Dichlorodiphenyltrichloro-	1.5 +	8	0/00	BZL009	
			ethane					
			Parathion	LT 8.5 -	-01	0/00	82L009	
			2-Chloro-1(2,4-Dichlorophenyl)	2.3 +	6	0/00	B2L009	
			Vinyldiethyl Phosphates					
			Tetrachloroethene	1.1 +	10+	0/60	BZR004	
			Thiodigiycol		ģ	0/00	82T006	
			Trichloroethene		ō	0/00	8ZR004	
			Ortho- & Para-Xylene	LT 4.9 +00	ě	0/00	BZR004	
			Zinc	5.3	+01	0/00	820011	
1001050205	7.8-8.8	5011	1,1.1-Irichloroethane	4.4	-01	0/00	BZR007	
			1,1,2-Trichloroethane	6.9	-01	0/00	B2R007	
			1,1-Dichloroethane	1.7	90+	0/00	82R007	
			1,2-Dichloroethene	1.7	90	ø/øn	82R007	
			1,2-Dichloroethane	5.6	-01	0/00	BZR007	
			S-Xylene	I.T 7.4 -	-01	0/00	BZR007	
			Aldrin	÷ .v	+03	0/00	825003	
			Ansente	5.0	00+	e/en	BZN018	
			Atrazine		+02	ø/øn	825003	
			Bicycloheptadiene	1.0 +	+01	0/00	B2R007	

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Results for some parameters may appear in more than one analytical fraction. Note:

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01/27/88	
Rocky Mountain Arsenal Program	Chemical Severs South Plants
	Task. 10
Ebasco Services Incorporated	Summery of Analytical Results

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Semple Number	825003	625003	10001	ADM20	651009	62R007	82R007	BZ0014	RZROOA	BZROOS	BZROOS	BZROOS	BZROOS	828008	825004	BZN019	BZ\$004	82R008	BZROOS	BZROOS	820015	BZROOS	82R008	825004	621010	BZROOS	825004	825004	BZ\$004	825004	82001S	820015
Units	a/an	0/07	7,51))	9	0/00	0/00	0/07	, de / de	0	0/00	0/05	0/05	0/00	9/95	0/07	0/05	0/05	0/00	0/00	6/60	0/07	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	110/0
Results	LT 2. +02	LT 1. +02			-	LT 5.4 -01	LT 4.9 +00		11 4.3 -01	10	1.7	1.7	LT 5.6 -01	LT 7.4 -01	2. +04	1.0 +01	LT 1. +02	9.2 -01	LT 2.5 -01	5.1 +00			2.7 +00	LT 1. +02		LT 1.5 +00	LT 2. +02	LT 2. +03				3.6 +01
Analytical Parameters	Parathion	2-Chloro-1(2,4-Dichlorophenyl)	Vinylatethyl Fhosphates	drimentorior or Intodigiyco1	Trichloroethene	Crtho- & Para-Xylene	Zinc		1.1.2-Trichloroethane	1.1-Dichloroethane	1,2-Dichloroethene	1,2-Dichloroethane	B-Xylene	Aldrin	Arsenio	Atrazine	Bicycloheptadiene	Benzene	Carbon Tetrachloride	Codmium	Methylene Chloride	Chloroform	Mexachlorocyclopentadiene	Chloroscetic Acid	Chlorobenzene	Chlordane	p-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfoxide	p-Chlorophenylmethyl Sulfone	Chromium	Conner	
Type	Soil								3 041	: !																						
Depth (ft)	7.8-8.8								A 8 .) }																						

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Results for some parameters may appear in more than one analytical fraction. Note:

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Ebasco Serv	Ebasco Services Incorporated	nted o	Rocky Mountain Arsenal Program	rogram		01/27/8
Summary of A	Summary of Analytical Results	sults	Task 10 Chemical Sewers	;	South Plants	
Boring Number	Depth (1t)	Sample fype	Analytical Persmeters	Results	Unita	Sample Number
1001050207	7.8-8.8	Soil	E-XVlene	LT 7.4 -01	0/00	BZUC02
			Aldrin	8		825005
			Arsenio	1.1 +01		BZN020
			Atincine Bicycloheptadiene	5.5	9/95	BZU002
			Benzene	LT 2.5 -01	0/00	82U002
			Carbon Tetrachloride	8		B20002
			Cadmium			8X0016
			Methylene Chloride			6 20002
			Chloroform	1.6 +00	0/00	82U002
			Hexachlorocyclopentadiene		0/00	825005
			Chloroscetic Acid	LT 3.55+01		8ZT011
			Chlorobenzene			8ZU002
				LT 5. +02		828005
			p-Chlorophenylmethyl Sulfide		6/6n 1	825005
			p-Chlorophenylmethyl Sulfoxide	LT 6. +03	0/00	828005
				S		825005
			5			BX0016
			Copper	2.5		BX0016
			Dibromochloropropene	LT 2. +02	B/8n :	825005
			Dibromochloropropane	6.3 +01	0/00	8ZU002
			Dicyclopentadiene	LT 3. +02		825005
			Dicyclopentadiene	1.9		820002
			Varona Ditentional anthropic and control of the con	LT 2. +02	0/07	625005
				:		2
			Dithiane		6/6n 1	8 25005
			Dieldrin	۶.		828005
			Dimethyldisulfide	0 0		BZU002
				LI 2. +02		67,500
			c cuy toenzene	9	0/00	200029
			Mercury	6.36-01	0/00	82P016
			Isodrin			825005
			Toluene	3.6		B20002
			Methylisobutyl Ketone	LT 7.3 -01	0/00	BZU002

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	4						-
Depth (ft)	Type	Analytical Parameters	œ	Results	_	Units	NUMBER
7.8-8.8	Soil	Malathion	Ľ	%	+02	0/00	828005
		1.4-Oxathiane	LT		+03	0/00	828008
			_		1 0	0/00	BX0016
		Dichlorodiphenylethane Dichlorodiphenyltrichloro-	ב ב	به نه نه	÷ 05	0/07	623005 625005
		ethane					
		Perethion			+05	ø/67	825005
	•	2-Chloro-1(2,4-Dichlorophenyl)	בֿו		+05	0/05	825005
		Vinyldiethyl Phosphates					
		Tetrachloroethene			ô	0/00	BZU002
		Thiodigiycol	ב	4.20+00	80.	0/00	BZT011
		Trichloroethene	-1	5.4 -01	٥٠	0/00	BZ0002
		Ortho- & Para-Xylene	ב ב	4.9	9	0/00	520002
		Zinc	l		10+	0/00	BX0016
	500		-		č	-/	*****
3		1 1 2-Infohlomethere	. <u>.</u>			9 (871003
		1.1.0fchloroethana	- 1	; -		6/6/	8711003
		1.2-Dichloroethene				9/0/1	82003
		1,2-Dichloroethane			7	0/05	820003
				0	ξ	0/01.	# CO. 12 A
		Aldrin		. 4	4	0/07	825006
		Arsenic	1		00	0/00	BZN021
		Atrazine	-		+05	0/05	825006
		Bicycloheptadiene	LT		- 0	0/07	820003
		Benzene		6.5	Ģ	0/00	BZU003
		Carbon Tetrachloride		2.0		0/00	BZUOO3
		Cadmium	ב		-01	0/00	620017
		Methylene Chloride	ב		QC+	0/00	BZU003
		Chloroform		3.6	1 0+	0/00	820003
		Hexachlorocyclopentadiene	ר	'n.	+02	0/00	825006
		Chloroacetic Acid	_	3.5	10+	0/00	BZT012
		Chlorobenzene			00+	0/00	B20003
		Chlordane	ב		+05	0/00	825006
		p-Chlorophenylmethyl Sulfide	-		+03	0/00	-

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Summary of Anal	Analytical Results	sults	Tesk IU Chemical	Sewers	South Plants	ر د	
Boring Number	Depth (ft)	Sample Type	Analytical Parameters	Results	Units	Sample Es Number	1
1001050007	11.8-12.8	Soil	p-Chlorophenylmethyl Sulforide p-Chlorophenylmethyl Sulfone Chromium		+04 +02 +03 +00	ug/g 825006 ug/g 825006	
			Copper Cabromachloropropane	9 6			
			Dibromorh Joropropane	2.5	+03 ug	ue/e 62U003	
			Dicyclopentadiene				
			Dicyclopentadiene Varona	0 r.	-01 -02 -04	ue/e 625005 ue/e 625006	
			Diisoprobylmethyl Phosphonate				
			Dithiane	-:			
			Dieldrin	ė,			
			Dimethyldisulfide	0			
			Endrin Ethylbenzene		5 5 5 5 5 5 5 5	ue/e 625006 ue/e 620003	
				6		F 1004 0	
				· -		10.79 6/50 10.79 6/50 10.79 6/50	
			Toluene	~			
			Methylisobutyl Ketone	7.3			
			Melathion				
			1.4-Oxathiene	11.	+03	900528 8/80	
			Lead	1.3			
			Dichlorodiphenylethane	ĸ,			
			Dichlorodiphenyltrichloro-	-	+02 ce	900528 0/00	
			Parathion	1.1 6.	+02 ug	ug/g BZ\$006	
			2-Chloro-1(2, 4-Dichlorophenyl)	LT 5.	+02 04	ug/g 625006	
			Vinyidiethyi rhosphates	101 4 8		1001/28	
			Thiodialycol				
			Trichloroethene	17 5.4			
			Ortho- & Para-Xylene	8.9			
			oui2	7.4	+01	ue/9 B20017	
1001090208	7.9-8.A	Soil	1,1,1-Trichloroethane	LT 4.3	-01 ug	ug/g 8213004	

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Ebasco Services Incorporated	ces Incorpor	ated	Rocky Mountain Arsenal Program	Program		01/27/88
Summery of Analyti	nalytical Results	sults	Trisk 10 (hemica)	Chemical Sewers South Plants	Plents	
Boring Number	Depth (ft)	Sample Type	Analytical Parameters	Reaults	Unit.	Sample Number
1001050208	7.8-8.8	Soi 1	1,1,2-Trichloroethane	LT 3.9 -01	6/60	82U004
			1,1-Dichloroethane	1.7	0/00	82000¢
			1.2-Dichloroethene	1.7	0/00	820004
			1,2-Dichloroethene m-xylene	LT 5.6 -01 LT 7.4 -01	0 0 0 0	82U004
			· · · · · · · · · · · · · · · · · · ·		-7	
			Aldrin		0/07	/00578
			Attento	17 3.0 400	0/01	875007
			Bicycloheptadiene	, P	0/07	BZUDOA
			Benzene		8/05	R2UOD4
			Carbon Tetrachloride	1.7 2.5 -01	9/90	82000¢
			Cadmium		0/00	820018
			Methylene Chloride		0/00	820004
			Chloroform	LT 2.9 -01	0/00	BZU004
			Hexachlorocyclopentadiene		0/07	825007
			Chloroscetic Acid	LT 3.55+01	B/07	82V005
			Chlorobenzene		0/00	9200Z9
				.	0/00	825007
				•	0/00	82\$007
			p-Chlorophenylmethyl Sulfoxide	LT 7. +00	0/07	625007
	•		p-Chlorophenylmethyl Sulfone	LT 601	0/07	828007
			Chromium	LT 5.2 +00	0/00	820018
			Copper	_	8/8 0	BZ0018
			Dibromochioropropere	401	0/07	625007
				;	}	***************************************
			Dicyclopentadiene	4.	0/00	828007
			Dicyclopentadiene	4.6	B/80	82000¢
			Vapone	'n.	0/00	B25007
-			Uiisopropylmethyl Phosphonate	LT 3, -01	0/07	825007 878007
			Dithiane	:	9	200529
			Dieldrin	'n	0/00	825007
			Dimethyldisulfide	2.0	0/00	B20004
			Endrin	LT 301	0/00	825007
			Ethylbenzene		0/00	82000¢

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Sample Number	82P018	825007	820004	8ZU004	825007	628007	820018	825007	625007		BZ\$007	BZ9007	871004	800V5	824005 824004	20079	820004	820018	820005	820005	82n003	82000S	8Z0002	820008	825008	BZN023	625008	820002	820005	82000S	820019	82000S	820005
Units	9/80	0/00	0/00	0/05	6/BN	0/00	0/00	0/00	0/00		0/07	0/00	0/00	0/01.	0 0		9 / 9	D/ D 0	0/00	0/00	0/00	0/00	0/07	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
Results	5.00-02	301	2.5 -01	7.3 -01	301	· +00	*		601	:	01	301	2.5 -03	4 20400	* . * O		•·• • • • • • • • • • • • • • • • • • •	6.7 +01	4.3 -01	3.9 -01	1.7 +00	1.7 +00	5.6 -01	1.2 +00	1. +03	5.0 +00	1. +01	7.2 +01	1.9 +00	1.6 +02		1.5 +00	4.6 +01
82	-	1	ב	17	ב	-	-1	-1	ב		ב	ר	-	-	; <u>-</u>		5		ב	ב	-1	ב	נ			ב	ב				ב	ב	
Analytical Parameters	Mercury	Isodrin	Toluene	Methylisobutyl Ketone	Malathion	1,4-Oxathiane	Lead	Dichlorodiphenylethane	Dichlorodiphenyltrichloro-	ethane	Parathion	2-Chloro-1(2,4-Dichlorophenyl)	Vinyldiethyl Fnosbhares Tetrachloroethene	Thinglelynol	Trichlocoethene		Ultio: a Para-XVIene	7inc	1,1.1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,2-Dichloroethene	1,2-Dichloroethane	B-Xylene	Aldrin	Arsenic	Atrozine	Bicycloheptadiene	Benrene	Carbon Tetrachloride	Codmium	Methylene Chloride	Chloroform
Sample	Soil																		Soil														
Depth (ff)	7.8-8.8																		11.8-12.8														

Ebasco Servi	Ebasco Services Incorporated	ated	Rocky Mountain Arsenal Program			/72/10
Summery of A	Summary of Analytical Results	sults	Task 10 Chemical	Chemical Severs South Plants	Plants	
Boring Number	Depth (ft)	Sample	Anslytical Parameters	Results	Units	Sample Number
1001050208	11.8-12.8	5011	Hexachlorocyclopentadiene Chloroacetic Acid Chlorobenzene Chlordane p-Chlorophenylmethyl Sulfide	LT 1. +01 LT 2.55+01 LT 2. +01 LT 2. +02	0/000	625008 B2V006 B2V005 625008 B2S008
			p-Chlorophenylmethyl Sulfoxide p-Chlorophenylmethyl Sulfone Chromium Copper Dibromochloropropane	LT 3. +02 LT 2. +01 7.8 +00 1.7 +01 2. +02	0/00 0/00 0/00 0/00	825008 825008 820019 820019 825008
			Dibromochloropropane Dicyclopentadiene Dicyclopentadiene Vapona Dilsopropylmethyl Phosphonate	1.2 +03 LT 2. +01 LT 6.4 -01 LT 1. +01 LT 1. +01	0/00 0/00 0/00 0/00	900529 900529 900529 900529
			Dithiane Dieldrin Dimethyldisulfide Endrin Ethylbenzene	LT 3. +02 LT 1. +01 LT 2.0 +01 LT 1. +01 LT 3.8 -01	00000	\$00028 \$00028 \$00028 \$00028
			Mercury Isodrin Toluene Methylisobutyl Ketone Melathion	5.69-02 4. +01 3.0 +02 LT 7.3 -01 LT 1. +01	00000	BZP019 BZS008 BZU005 BZU005 BZS008
			1,4-Oxathiane Lead Dichlorodiphenylethane Dichlorodiphenyltrichloro- ethane Parathion	LT 2. +02 LT 1.3 +01 LT 1. +01 LT 2. +01 LT 2. +01	00000	825008 825019 825008 825008 825008
			2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates Tetrachloroethene	1.1 +01	0/00	BZ5008 BZU005

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Summary of Analytical Results

11.5-12.5

1002050301

11.8-12.8

1001050208

Depth (ft)

Boring Number

Chemical Sewers -- South Plants

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Fbasco Servi	Fbasco Services Incorporated	ated	Rocky Mountain Arsenal Program	-corram		01/27/88
Summery of Analyt.	inalytical Results	\$1117	Task 10 Chemical	Chemical Severs South Plants	Plants	
Boring	Depth (ft)	Sample Type	Analytical Parameters	Results	Grits.	Semple Number
1002C\$0301	11.5-12.5	Sof1	Dieldrin Dimethyldisulfide Endrin Ethylbenzene Mercury	LT 2. +01 LT 2.0 +01 LT 2. +01 LT 3.8 -01 6.56-02	00000	CACOOB CACOOB CACOOB CACOOB CACOOB
			Isodrin Toluene Methylisobutyl Ketone Malathion 1,4-Oxathlane	LT 2. +01 LT 2.5 -01 LT 7.3 -01 LT 2. +01 LT 3. +02	00000	CACOOS CAE DOS CACOOS CACOOS
			Lead Dichlorodiphenylethane Dichlorodiphenyltrichloro- ethane Parathion 2-Chloro-1(2.4-Dichlorophenyl) Vinyldiethyl Phosphates	6.41+02 LT 2. +01 LT 3. +01 LT 2. +01 LT 2. +01		CACOOS CACOOS CACOOS CACOOS
			Tetrachloroethene Trichloroethene Ortho- & Para-Xylene Zinc	3,3 +00 LT 5,4 -01 LT 4,9 +00 6,20+01	0000	CAE008 CAE008 CAE008 CAA019
1002050302	11.5-12.5	Soil	1,1,1-Trichloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane	LT 301 LT 301 LT 901 LT 301 LT 301	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	CAF002 CAF002 CAF002 CAF002
			m-xylene Aldrin Araenic Atrazine Bicyclohentadiene Carbon Tetrachloride Cadmium	LT 701 LT 3. +01 LT 2. 50+00 LT 3. +01 LT 301 LT 301 LT 7. 36-01		CAF002 CAC009 GZZ020 CAC009 CAF002 CAF002 CAA020

Note: Results for some parameters may appear in more than one analytical fraction.

Rocky Mountain Arsenal Program	lask 10 Chemical Severs South Plants
Ebasco Services Incorporated	Summery of Analytical Results

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Boring

vices incorporated	Rocky Mountain Arsenal Program	Program				01/27/88
Analytical Results	lask 10 Chemic	Chemical Severs South Plants	: •	South	Plants	
Sample Depth (ft) Type	Analytical Parameters	*	Results		Unita	Sample Number
11.5-12.5 5011	Methylene Chloride	ן '	',	-0	0/00	CAF002
	Chloroform	ב	'n	-01	0/00	CAF002
	Hexach lorocyclopentadiene		•	÷03	0/67	CAC009
	Chlorobenzene Chloropenzene	֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֚֚֚֚֚֚֚֡֞֝֝	ń i	ó é	0/0n	CAF002
		i				
		ב	4	+05	0/00	CACUD9
		:כ		7 04	0/07	CACOCO
	Change to the control of the control	5		. +01	0/0/	CAACOO
	Copper		-	1.92+01	9/95	CAA020
	Dibrosochloropropene	ב	'n	+01	0/00	CAC009
	Dibromochloropropane	בי		ō	0/00	CAF 002
	Dicyclopentadiene	5		10+	0/00	CAC009
	Dicyclopentadiene	-1	η,	ō	0/00	CAF 002
	Vapona	כ		10+	0/00	CAC009
	Dilaoprosylmethyl Prosphonate	נ	'n.	+01	0/00	CAC009
	Dithiane	11		+02	0/00	CAC009
	Dieldrin	LT		10+	0/07	CACD09
	Dimethyldisulfide	רז		-01	6/60	CAF 002
	Fndrin	ב	ĸ,	+ 01	B/00	CAC009
	Ethylbenzene	-	'n	-01	a/an	CAF002
	Mercury		o	9, 32-02	0/00	BZX020
	Isodrin	ב		+01	0/00	CACOO9
	Toluene	-		1 0-	0/00	CAF002
	Methylisobutyl Katone	ב	m,	-01	0/00	CAF002
	Maiathlon	1.7	₩,	101	0/00	CAC009
	1,4-0xathiane	11	Ġ	+02	8/8n	CAC009
	Lead		1.6	SO.	0/00	CAA020
	Uichlorodiphenylethane	1.1		10+	0/01	CACDO9
	Dichlorodiphenyltrichloro-	-	ڼ	10+	0/00	CACOO9
	Parathion	LT		10+	0/00	CAC009
	2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphetes	רי	m.	÷01	0/07	CAC009
	A CALL CARDO C. O. CALL CARD CALLER					

CAF003 CAF003 CAF003 CAC010 CACD10 CAF003 CACO10 CACO10 CAF DO2 CAF 002 CAA020 CAFOOS CAFOOS CAF 003 **CAG005** CAFOO3 CACO10 CAF003 CACD10 CACOLO CAG005 CAF 002 CAF003 822021 -- South Plants 0/00 0/00 0/00 0/07 0/00 0/00 0/00 0/00 0/00 0/00 o/on 0/00 0/00 0/07 0/00 0/00 0/00 0/00 0/00 0/00 0/00 0/00 3. -01 \$ 5 -01 -01 85 +02 99 2.50+00 102 10+ 0000 ö -01 -01 0 i 1.64+01 7.36-01 Results Chemical Sewers ב p-Chlorophenylmethyl Sulfide p-Chlorophenylmethyl Sulfoxide p-Chlorophenylmethyl Sulfone Hexach lorocyc lopentadiene Analytical Parameters 1,1,2-Trichloroethane 1,1-Dichloroethane 1,2-Dichloroethene 1,1,1-Trichloroethane Ortho- & Para:Xylene Carbon Tetrachloride 1,2-Dichloroethane Methylene Chloride bicycloheptadiene Tetrachloroethene Trichloroethene Chlorobenzene Chloroform Chlordene Chromium m-Xylene Atrazine Codmics Arsenic **Task 10** Aldrin 21nc Sample Type Sofl 5011 Summany of Analytical Results 11.5-12.5 Depth (ft) 11.5-14.5

1002C 50303

1002050302 Bor ing Number

CAC010 CAC010 CAC010

0/00

+ 00 + 00 + 05 + 05

Diisopropylmethyl Phosphonate Dithiane

CAGOOS CACDID CAF 003 CACDID CAF DO3

0/00

2.13+01

0/00 0/00 0/00 0/00

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Dibromochioropropane Dibromochloropropene

Copper

Dicyclopentadiene Dicyclopentadiens

Vapona

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Results for some parameters may appear in more than analytical fraction.

Ebasco Services Incorporated

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11.5-12.5 501 Dieldrin D	Boring	Depth (ft)	Sample Type	Anglytical Parameters	æ	Results	v.	Unite	Sample Number
11.5-12.5 501 DiteIdrin DiteIdrin DiteIdrin Endrin							1		
Ethylbenzene	020 50303	11.5-12.5	Soi 1	Dieldrin	1	Ġ	00+	0/00	CAC010
Ethylbenzene LT 5. +00 uage Hercury Hercury Isodrin Isodrin Hethylisobutyl Ketone Hethylisobutyl Ketone Hethylisobutyl Ketone Hethylisobutyl Ketone Hethylisobutyl Ketone Hethylisobutyl Ketone Hethylisobutyl Ketone Hethylisobutyl Ketone Hethylisobutyl Ketone Hethylisobutyl Ketone Hollorodiphenylethane Hollor				Dimethyldisulfide	L	89	10-	0/00	CAF003
Ethylbenzene				Endr 1n	ļ	•	00+	0/00	CACOID
Isodrin				Ethy 1benzene	ב	ъ,	- 0	0/00	CAF003
Isodrin				Mercury	L1	5.0	0-02	0/00	CA1005
Toluene Hethyllsobuty Ketone 17 301 ua/9 Hethyllsobuty Ketone 17 301 ua/9 Hethyllsobuty Ketone 17 5. +00 ua/9 Lead				Isodrin	17	ڼ	9	0/00	CACO10
Methylisobutyl Ketone				Toluene	-1	'n	-01	0/00	CAF003
Malathion				Methylisobutyl Ketone	F.1	ĸ,	-01	0/00	CAFDO3
1,4-Oxathlane				Melathion	-	.	9	0/0n	CACO10
Company Comp				1,4.0xathiane	-	7	+05	0/00	CACO10
Dichlorodiphenylethane				Lead		2.1	6+01	0/00	CA6005
Dichlorodiphenyltrichloro				Dichlorodiphenylethane	L	ė	9	0/00	CAC010
Parather Parather				Dichlorodiphenyltrichloro-	1	.	+01	B/8n	CACD10
2-Chioro-1(2,4-Dichlorophenyl) 2-Chioro-1(2,4-Dichlorophenyl) 1-Etrachloroethene		-			-	α	Ş	,	010747
Tetrachloroethene				2-Chloro-1(2 4-Dichlorophens)		; ,	3 6		21000
Tetrachloroethene				Vinyldiethyl Phosphates	5	;	3	3	
Irichloroethene				Tetrachloroethene	-	'n,	-01	0/00	CAFOO3
Ortho- & Para-Xylene Zinc Zinc 11.5-12.5 Soil 1.11Trichloroethane 1.1-Dichloroethane 1.2-Dichloroethane 1.2-Dichloroethane 1.2-Dichloroethane 1.2-Dichloroethane 1.2-Dichloroethane 1.2-Dichloroethane 1.2-Dichloroethane 1.2-Dichloroethane 1.3-Dichloroethane 1.4-Dichloroethane 1.5-Dichloroethane 1.7Di uq/q Aldrin Arsenic Ar				[rich]oroethene	L_1	ņ	-03	6/8n	CAFOO3
Zinc Zinc 11.5-12.5 Soil 1.1.1-Trichloroethane 1.1.2-Trichloroethane 1.2-Dichloroethane 1.3Oil ug/g Arrarine Ricycloheptadiene 1.1 3Oil ug/g 1.1 3.0 -Oil ug/g 1.1 3.0 -Oil ug/g 1.1 3.0 -Oil ug/g Ricycloheptadiene 1.1 3Oil ug/g 1.1 3Oil ug/g Ricycloheptadiene 1.1 3Oil ug/g Ricycloheptadiene 1.1 3Oil ug/g Ricycloheptadiene 1.1 3Oil ug/g Ricycloheptadiene 2. +OO ug/g				Ortho- & Para-Xylene	ב	η,	-01	0/00	CAF003
11.5-12.5 Soil 1.11.1-Trichloroethane LT 301 ug/g 1.1.2-Trichloroethane LT 301 ug/g 1.1.2-Dichloroethane LT 501 ug/g 1.2-Dichloroethane LT 501 ug/g 1.2-Dichloroethane LT 501 ug/g 1.2-Dichloroethane LT 501 ug/g 2.2-Dichloroethane LT 301 ug/g 3.31+00 ug/g 4.31+00 ug/g 5.31+00 ug/g 6.31+00 Tetrachloride Si +00 ug/g 7.31+00 ug/g 8.31+00 Tetrachloride Si +00 ug/g 9.31+00 9.3				Zinc		7.2	6+01	0/00	CA6005
1,1,2-Trichloroethane 1,1-Dichloroethane 1,2-Dichloroethane 1,1 3, -01 ug/g Arsenic Arsenic Arsenic Arsenic Arsenic Arsenic Arsenic Arsenic Arsenic Arsenic Arsenic Arsenic Arsenic Arsenic Arsenic 3,3+00 ug/g Carbon Tetrachloride 3, +00 ug/g	102CS0304		Soi 1	1,1,1-Trichloroethane	<u> </u>	r)	-01	o/on	CAF 004
LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 3.0 -01 ug/g LT 3.0 -01 ug/g 17 3.0 -01 ug/g 17 301 ug/g LT 301 ug/g LT 301 ug/g 3. +00 ug/g				1,1,2-Trichloroethane	,	'n	-01	0/00	CAF004
LT 301 ug/o LT 701 ug/o LT 3.0 -01 ug/o LT 3.0 -01 ug/o 1.7 3.0 -01 ug/o 1.7 3.0 -01 ug/o 1.7 301 ug/o 1.7 301 ug/o 2.3 +00 ug/o				1,1-Dichloroethane	1	o.	-01	0/07	CAF 004
4. +01 uq/o LT 701 uq/o LT 3.0 -01 uq/o 1 3.0 -01 uq/o 1 3.0 -01 uq/o LT 301 uq/o 3. +00 uq/o				1.2-Dichloroethene	ב	η.	-01	0/00	CAFOD4
LT 701 uq/q LT 3.0 -01 uq/q 3.31+00 uq/q 17 3.0 -01 uq/q 1,7 301 uq/q LT 301 uq/q 3. +00 uq/q				1,2-Dichloroethane		4	+01	0/80	CAF004
LT 3.0 -01 ug/g 3.31+00 ug/g 17 3.0 -01 ug/g 1.7 301 ug/g LT 301 ug/g 3. +00 ug/g				- X × 1 0 0 0	1	۲.	-01	0/00	CAF 304
3.31+00 ug/o 17 3.0 -01 ug/o 1.7 301 ug/o 1.7 301 ug/o 3. +00 ug/o				Aldrin	1	3.0	-01	0/00	CAD002
17 3.0 -01 ug/g 1.7 301 ug/g LT 301 ug/g 3. +00 ug/g				Arsenic		W.	1+00	0/00	8220:32
LT 301 ug/g LT 301 ug/g 3. +00 ug/g				Atravine	- 1	3.6		0/00	CADDUZ
LT 301 ug/g 3. +00 ug/g				Bicycloheptadiene	1,1	₩,	-01	0/00	CAF 004
3, +00 ug/g				Benzene	ן.	'n	-01	0/80	CAFOU
				Carbon Tetrachloride		"	00+	0/00	CAF (104

Ebasco Services Incorporated

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Rocky Mountain Arsenal Program

Ebasco Services J	ices Incorporated	कि कर	Rocky Mountain Arsenal Program	rogram			01/27/88
Summary of Analyt	Analytical Results	sults	Task 11) Chemical	Chemical Sewers	South	South Plants	
Roring	Depth (ft)	Sample	Analytical Parameters	Res	Results	Unit.	Semple Number
1002050304	11.5-12.5	Set 1	Methylene Chloride	נ	701	0/80	CAF004
			Chloroform		2. +00	0/00	CAF DO4
			Hexachlorocyclopentadiene		•	0/00	CAD002
			Chlordene	55	301 2.0 +00	9 P 9 0 9 0 9 0	CAF004 CAD002
			ereting [votes and one of the order	-	6	70.	60000
						0/07	CADOO2
				בי	3.0 -01	0/00	CAD002
			moimo. III.		1.52+01	0/00	CAG006
			Copper		2.61+01	0/8n	CAGD06
			Dibromochloropropane	-	3.0 -01	0/00	CAD002
			Dibramochloropropane		401	0/00	CAF004
			Dicyclopentadiene		0	0/00	CAD002
			Dicyclopentadiene	ב		6/6n	CAF 004
			Vapona		3.0 +00	0/00	CAD002
	.•		Diisopropylmethyl Phosphonate	ב	1.0 +00	0/00	CAD002
			Dithiane	רו	4.0 -01	0/00	CAD002
			Dieldrin			0/07	CAD002
			Dimethyldisulfide			0/00	CAF004
			Endrin	<u>.</u>	5.0 -01	0/00	CAD002
			Ethylbenzene	<u>-</u>	301	0/00	CAF004
			Mercury		8.73-02.	0/00	CA1006
			Isodrin		0	0/00	CAD002
			Toluene			0/00	CAF004
			Methylisobutyl Ketone	בי בי	301	0/0n	CAF004
			Malethion		7.0 -01	0/00	CAD002
			1,4-Oxathiane			0/00	CAD002
			Lead	.,	2.23+01	0/00	CAG006
			Dichlorodinhenylethane	ב	6.0 -01	0/00	CAD002
			Dichlorodiphenyltrichloro-	ב י	5.0 -01	0/00	CAD002
			ethane				
			Parathion		9.0 -01	0/00	CAD002
			2-Chlure 1(2,4-Dichlorophenyl)	רז	6.0 -01	0/00	CAD002
			Vinyldlethyl Phosphates				

01/27/88

Depth (ft)	Sample	Analytical Peremeters	œ	Results	Units	Semple Number
11.5-12.5	5011	fetrachloroethene	1	1. +01	0/0n	CAFOO4
		inichioroethene	٠.		0/07	CAF 004
		Ortho- & Para-Xylene	_	301	0/07	CAFOOL
		Zinc		8.25+01	e/en	CAG006
11.5-12.5	Soft	1.1.1-Trichloroethane	-	301	0/07	CAFOOS
		1.1.2-Trichloroethane	i <u>-</u>	3.	0/00	CAFOOS
		1.1-Dichloroethane	<u>.</u>		0/07	CAFOOS
		1,2-Dichloroethene	-		0/00	CAFOOS
		1,2-Dichlornethane	LT		8/6n	CAF 005
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-	,	6/0:	1000
			- L			
			ב ב	10.0) i	
		Armenic	•	3.47400	0 / 0	62023
		ALLEZINE	ָ ע	_	0/07	CAUCUS
		Bicycloheptadiene	-1	301	0/0n	CAF 005
		Benzene	1	301	0/00	CAFO05
		Carbon Tetrachloride	_		0/07	CAFOOS
		Cadmium	-1	7.36-01	0/00	CAG007
		Methylene Chloride	-		0/00	CAF005
		Chloroform	L1	301	6/6n	CAF 005
		ere Lettered Covocio d'anne H	-	10-	0/01	Z A DOOR
		Chlorobenzene	ב ו		0/00	CAFOOS
		Chlordane	ב	_	0/00	CAD003
		p-Chlorophenylmethyl Sulfide	-1		0/07	CAD003
			ר		0/00	CAD003
		p-Chlorophenylmethyl Sulfone	۲٦	3.0 -01	0/00	CADOUS
				1.36+01	0/00	CAG007
		Copper		3.81+01	0/0n	CAG007
		Diteromochloropropane	۲	3.0 -01	0/00	CAD003
		Dibromochloropropate	r 1	401	0/00	CAF005
		Dicyclopentadiene	-	1.0 +00	na/a	CADOO3
		Dicyclopentadiene			0/00	CAFOOS
		Vancany	-		0/00	CADOUS
		0 4 6 0 0 4 0 0 4 0 4 0 4 0 4 0 4 0 4 0				
					()	

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Bor 1ng Number Note: Results for some parameters may appear in more than one analytical fraction.

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CAL 002

0/00 0/0n

2.5 -01 2.5 -01 7.56-01

Carbon Tetrachloride

Benzene

Cadmitum

0/00

CAL 002 CAG011

01/27/88 CAG007 CADD03 CADD03 CAL 002 CAL 002 CA1007 Number CADDO3 CAFOOS CADD03 **CAF 005 CADD03** CAFOOS CAFOOS CADOG3 CADDO3 CAG007 **CAD003** CAD003 CAFD05 CAFOOS CAF005 CALD02 CAL DO2 **CAL.002** CAL DO2 CALO02 CADOD7 CADOO7 CAHOD7 Chemical Sewers -- South Plants 6/60 0/0n 0/07 9/05 9/90 0/00 0/00 0/00 0/07 0/00 0/07 0/05 0/00 0/00 0/07 9/95 0/00 0/05 0/07 0/00 0/00 0/05 0/00 0/00 0/00 0/00 5.0 -01 3. -01 5.00-02 8.38+00 6.0 -01 5.0 -01 3. -01 9.0 -01 6.0 -01 \$ 5 7.4 -01 3.0 -01 -01 ö Ģ ö -01 5.6 -01 2.50+00 3.0 -01 -01 -01 ņ ٠ ö 3.0 -01 3.6 -01 Results 3.0 7.0 3.0 4 to בבב Rocky Mountain Arsenal Program ここ ۲ 1 2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates Dichlorodiphenyltrichloro-Dichlorodiphenylethane Analytical Parameters Methylisobutyl Ketone 1.1.2-Trichloroethane 1,1,1-Trichloroethane Ortho- & Para-Xylene 1.1-Dichloroethane 1.2-Dichloroethene 1,2-Dichloroethane Dimethyldisulfide Tetrachloroethene Bicycloheptadiene Trichloroethene 1,4-0xathiane Ethy 1 benzene Parathion Malathion Dieldrin B-Xylene Atroz ine Task 10 Isodrin Toluene Arsenic Mercury ethane Endrin Aldrin Sample Type 5011 Soil Summary of Analytical Results Ebasco Services Incorporated 11.5-12.5 Depth (ft) 11.5-12.5 1002050306 1002C S0305 Boring Number

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Note: Results for some parameters may appear in more then one analytical fraction.

1002050306

Boring

Rocky Mountain Arsenal Program	lask 10 Chemical Sewers South Plants
Ebasco services Incorporated	Summary of Analytical Results

Sample Number	CAL 002	CAL002	CAD007	CAK DO6	CALD02	CADOD7	CAD007	CAD007	CAD007	CAG011	CAG011	CAD007	CAL 002	CAD007	CAL.002	CAD007	CAD007	CAD007	CAD007	CALDD2	CAD007	CAL DO2	CA1011	CAD007	CAL002	CAL 002	CAD007	CAD007	CAG011	CAD007	CAD007		CAD007	CAD007
Units	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	6/8n	0/00	0/00	0/60	0/00	b/on	0/00	B/87	0/00	0/00	0/0n	0/00	0/00	0/00	0/00	0/00	0/00	0/pn	0/80	•	0/60	0/6n
Results	1.5 +00	2.9 -01	6.0 -01	3.55+01	1.5 +00	2.0 +00	9.0 -01	3.0 -01	3.0 -01	1.37+01	1.90+01	3.0 -01	2.4 +00	1.0 +00	6.4 -01	3.0 +00	1.0 +00	4.0 -01	3.0 -01	2.0 +01	5.0 -01	3.8 -01	1.99-01	3.0 -01	2.5 -01	7.3 -01	7.0 -01	3.0 -01	8.38+00	6.0 -01	5.0 -01		3.0 -01	6.0 -01
8	-1	ב	ב	-	ב	ב		ב	ב			ב	ר	ב	ר	-	ב	ב	L1	ב	<u>-</u>	L1		١.	-1	-	-	-	ב	ב	7		_	ز
Analytical Parameters	Methylene Chloride	Chloroform	Hexachlorocyclopentadiene	Chloroscetic Acid	Chlorobenzene	Chlordane	p-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfoxide	p-Chlorophenylmethyl Sulfone	Chromium	Copper	Dibromochloropropane	Dibromochloropropane	Dicyclopentadiene	Dicyclopentadiene	Vapona	Diisopropylmethyl Phosphonate	Dithiane	Dieldrin	Dimethyldisulfide	Endrin	Ethylbenzene	Mercury	Isodrin	Toluene	Methyllsobutyl Ketone	Malathion	1.4-Oxathiane	Lead	Dichlorodiphenylethane	Dichlorodiphenyltrichloro-	ethane	Parathion	2-Chloro-1(2.4-Dichlorophenyl) Vinyldiethyl Phosphates
Sample	5011																																	
Depth (ft)	11.5-12.5																																	

Task 10

Summary of Analytical Results

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Bor ing Number

Chemical Sewers -- South Plants

Samp Le Number	CAL 002 CAK006 CAL 002 CAL 002 CAG011	CAL003 CAL003 CAL003 CAL003 CAL003	CALDO3 CADDO8 CADDO8 CALDO3	CALD03 CALD03 CALD03 CALD03	CADDO8 CAKDD7 CALDO3 CADDO8 CADDO8	CADDO8 CADDO8 CAGD12 CAGD12 CALDO8 CALDO3 CADDO8
Units	0/07	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0/000	0/07 0/07 0/07	00000	00000 000
Results	2.5 -01 4.20+00 5.4 -01 4.9 +00 5.94+01	4.3 -01 3.9 -01 1.7 +00 1.7 +00 5.6 -01	7.4 -01 3.0 -01 2.50+00 3.0 -01 3.6 -01	2.5 -01 2.5 -01 7.36-01 1.5 +00 2.9 -01	6.0 -01 3.55+01 1.5 +00 2.0 +00 9.0 -01	3.0 -01 3.0 -01 5.53+00 3.42+01 3.0 -01 2.4 +00 1.0 +00 6.4 -01
a i	וווו		לוללל	מלללל	וונונו	בבל ל ללל
Analytical Parameters	Tetrachloroethene Thiodigiycol Trichloroethene Ortho- & Para-Xylene	1,1.1-Trichloroethane 1,1.2-Trichloroethane 1,1-Pichloroethane 1,2-Dichloroethane 1.2-Dichloroethane	m-xylene Aldrin Arsenic Atrazine Bicycloheptadiene	Benzene Carbon Tetrachloride Cadmium Methylene Chloride Chloroform	Hexachlorosyclopentadiene Chlorobenzene Chlorobenzene Chlordane p-Chlorophenylmethyl Sulfide	p-chlorophenylmethyl Sulfoxide p-chlorophenylmethyl Sulfone Chromium Conper Dibromochloropropane Uibromochloropropane Dicyclopentadiene
Sample	Sofi	Soil				
Depth (11)	11.5-12.5	15.5-16.5				

Fbasen Services	ices Incorporated	ated	Rocky Mountain Arsenal Program	.ogr e m		01/27/88
Summary of Anal	Analytical Results	sults	Task 10 Chemical	Chemical Sewers South Plants	. Plants	
Boring	Depth (ft)	e Lymp's fry T	Analytical Parameters	Results	Units	Sample
1002050306	15.5-16.5	Soil	Vapona Diisopropylmethyl Phosphonate Dithiane Dieldrin Dimethyldisulfide	LT 3.0 +01 LT 1.0 +00 LT 4.0 -01 LT 3.0 -01 LT 2.0 +01	0/00	CADODS CADODS CADODS CADODS CALDOS
			Endrin Ethylbenzene Mercury Isodrin Toluene	LT 5.0 -01 LT 3.8 -01 LT 5.00-02 LT 3.0 -01 LT 2.5 -01	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CADOD8 CALD03 CAI012 CAD008 CALD03
			Methylisobutyl Ketone Melathion 1.4-Oxathiane Lead Dichlorodiphenylethane	LT 7.3 -01 LT 7.0 -01 LT 3.0 -01 LT 8.38+00 LT 6.0 -01	0/0n 0/0n 0/0n	CALDD3 CADDB CADDB CAGD12 CADDB
			Dichlorodiphenyltrichloro- ethane Parathlon 2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates Tetrachloroethene Thiodiglycol	LT 5.0 -01 LT 9.0 -01 LT 6.0 -01 LT 2.5 -01 LT 4.20+00	0 00 00	CADOD8 CADOD8 CALDO3 CACOO7
10020.50306	20.5-21.5	5011	Trichloroethene Ortho- & Para-Xylene Zinc 1,1,1-Trichloroethane 1,1,2-Trichloroethane 1,1-Orichloroethane			CALDO3 CALDO3 CALDO3 CALDO4 CALDO4 CALDO4
			1.2-Dichloroethene 1.2-Dichloroethene m-Xvlene Aldrin Arsenic Atrazine	LT 5.6 -01 LT 7.4 -01 LT 2.5 -01 LT 2.5 -01 LT 2.5 -01 LT 2.5 -01	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CALODA CALODA CANDO9 CANDO9 CANDO9

CADDD9 CADDD9 CAGD13 CADD09

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7.1 -01 2.5 -01 8.38+00 5.7 -01

Malathion 1.4-Oxathiane Lead Dichlorodiphenylethane

Boring Number	Depth (ft)	Sample	Analytical Persmeters	Results	Units	Sample Number	
1002C\$0306	20.5-21.5	\$011	Bloycloheptadiene	LT 3.6 -01	0/00	CALDO4	
			Benzene		0/00	CALODA	
			Carbon letrachloride		0/00	CALOOA	
			Cadmium		0/00	CAG013	
			Methylene Chloride	LT 1.5 +00	D/00	CAL 004	
			Chloroform	LT 2.9 -01	0/00	CALODA	
			Hexachlorocyclopentadiene		0/00	CAD009	
			Chlorogretic Acid		0/00	CAKOOS	
			Chlorobenzene		0/00	CALOO4	
			Chlordane	LT 1.7 +00		CADDD9	
			p-Chlorophenylmethyl Sulfide	LT 9.1 -01	0/00	CADDO9	
					0/00	CADOD9	
					0/00	CADOO9	
			Chrostes	-	0/00	CA6013	
			Copper	3, 30+01	ø/øn	CA5013	
			Dibromoch! oropiopane	LT 2.8 -01	0/00	CAD009	
			Dibramochloropropane	2.4	0/00	CALDD4	
			Dicyclopentadiene	1.1	0/00	CADOD9	
			Dicyclopentadlene		0/00	CALDO4	
			Vapona	LT 3.0 +00	0/00	CAD009	
			Olisopropylmethyl Phosphonate	LT 1.1 +00	00/00	CADOO9	
			Dithimme		0/00	CADDO9	
			Dieldrin	LT 2.5 -01	0/00	CADMO9	
			Dimethyldisulfide		0/00	CALODA	
			Endrin	LT 4.6 -01	o/øn	CAD009	
			Ethylbenzene	LT 3.8 -01	0/00	CAL DO4	
			Mercury	LT 5.00-02	0/00	CA1013	
			Isodrin		0/00	CAD009	
			Tolliene	LT 2.5 -01	0/00	CAL DO4	
			Methyllsobutyl Ketone	1.3 -01	0/07	CALOOA	

01/27/88

Rocky Mountain Arsenal Program

Ebasco Services Incorporated

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Summary of Analytical Penults

1002050306

Boring

Analytical Parameters	E	Results	Units	Semple Number
Dichlorodiphenyltrichloro- ethane	ר	4.7 -01	0/60	CADDU9
Parathion	1	8.5 -01	0/00	CAD009
2-Chloro-1(2,4-Dichlorophenyl)	ר	6.1 -01	6/6n	CAD009
Tetrachioroethere	-1	2.5 -01	0/00	CALDOA
Thiodiglycol	ב	4.20+00	0/00	CAKOOS
Trichloroethene	-	5.4 -01	0/00	CALOO
Ortho- & Para-Xylene	7	4.9 +00	0/00	CALDO4
71nc		7,75+01	0/00	CAG013
1,1,1-Trichloroethane	ב	4.3 -01	0/00	CALDOS
1,1,2-Trichloroethane	-1	3.9 -01	0/00	CALDOS
1,1-Dichloroethane	-	1.7 +00	0/00	CALOOS
1.2-Dichloroethene	ב	1.7 +00	0/00	CALDOS
1,2-Dichloroethane	כ	5.6 -01	ø/øn	CAL 005
モーメン1000の	-1	7.4 -01	0/00	CALODS
Aldrin	ב	3.0 -01	0/00	CAD010
Arsenic	ב	2,50+00	0/00	CAHDID
Atrazine	-	3.0 -01	0/0 0	CADO10
Bicycloheptadiene	ב	3.6 -01	p/0n	CAL 005
Benzene	-1	2.5 -01	0/00	CALOOS
Carbon Tetrachloride	۲	2.5 -01	0/00	CALOOS
Cadmium	ב	7.36-01	0/00	CAG014
Methylene Chloride	-1	1.5 +00	0/0n	CALDOS
Chloroform	ר	2.9 -01	0/01	CAL 005
Hexachlorocyclopentad/ene	11	6.0 -01	0/00	CADO10
Chloroacetic Acid	רו	3.55+01	0/00	CAK009
Chlorobenzene	ב	1.5 +00	6/60	CALODS
Chlordene	-	2.0 +00	0/00	CADO10
p-Chlorophenylmethyl Sulfide	[1	9.0 -01	0/00	CAD010
p-Chlorophenylmethyl Sulfoxide	1	3.0 -01	0/00	CADD10
p-Chlorophenylmethyl Sulfone	ב	3.0 -01	6/6n	CADO10
Chromium	_	6.53+00	0/00	CAG014
		400.00	- 1	710000

Incorporated	
Services	
Ebasco	

Summary of Analytical Results

Program
Arsenal
Mountain
Rocky

01/27/88

Plants
South
;
Severs
Chemical

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Boring	Depth (ft)	Semple	Analytical Peremeters	æ	Results	Units	Semple Number
1002050306	25.5-26.5	Soft	Of bromoch oropropare	-	10- 0-1	0/01	CADOLO
			Dibromochloropropere	. F		0/07	CAL DOR
							2000
				- 1		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
			Cicyclopentaglene	-		0/00	CALOGS
			Vapona	-1	3.0 +00	0/00	CAD010
			Diisopropylmethyl Phosphonate	ב	1.0 +00	0/00	CADO10
			Dithiane			0/00	CADO10
			Dieldrin	ב		0/00	CADD10
			Dimethyldisulfide	ב	2.0 +01	0/00	CAL 005
			Endrin	-1		0/00	CADDIO
			Ethylbenzene	1	3.8 -01	0/00	CALDOS
			Mercury	L.1	5.00-02	0/00	CAIDIA
			Isodrin	L1	3.0 -01	0/00	CADO10
			Toluene	-1	2.5 -01	0/00	CALOOS
			Methylisobutyl Ketone	ב		0/00	CALOOS
			Melethion	ב	7.0 -01	0/00	CADO10
			1.4-Oxathiane	L	3.0 -01	0/00	CADG10
			Lead	ב	8.38+00	0/00	CAG014
			Dichlorodiphenylethane	ב	6.0 -01	0/60	CADO10
			Dichlorodiphenyltrichloro-	1.1	5.0 -01	0/00	CADOID
			ethane				
			Parathion	5	9 0 -01	0/00	CADOIO
			2-Chloro-1(2,4-Dichlorophenyl)	֖֝֝֡֡֡	6.0 -01	0/00	CADOLO
			Vinyldiethyl Phosphates				
			Tetrachloroethene	ר	2.5 -01	0/00	CALDOS
			Thiodiglycol	ב	4.20+00	0/00	CAK009
			Trichloroethene	נ	5.4 -01	0/00	CAL 005
			Ortho- & Para-Xylene	ב	4.9 +00	0/00	CALOOS
			Zinc		7, 52+01	0/00	CAG014
1002050307	11.5-12.5	Soil	1.1.1-Trichloroethane	5		0/00	CAED06
			1,1,2-Trichloroethane	1	3.9 -01	0/00	CAEDO6
			1,1-Dichloroethane	٢٦		0/00	CAEDD6
			1,2-Dichloroethene	-1	1.7 +00	0/00	CAEDO6
			1.2-Dichloroethane	5		0/00	CAFOOK

Fbasco Services Incorporated

Sample Depth (ft) Type	Anglytical Porometers	Results	Units	Sample
		10- 4 6 11	8/80	CAE006
5011	3-XX1616		0/00	CAC006
			0/00	822017
			0/00	CAC006
	Atrazine Bicycloheptadiene	3.6	0/00	CAE 006
		, s c	D/0/1	CAEDD6
			0/00	CAEDO6
	Tetrachioride	7.36	0/00	CAA017
				CAEDD6
	Methylene Chioring Chloroform	2.9		CAE006
		LT 301	0/00	CACOOS
		3.55	0/60	82W012
			0/00	CAEOD6
	Chloroperizerie		0/00	CAC006
	henyimethyl Sulfide	LT 4. +00	0/00	CACD06
		LT 7. +00	0/00	CAC 006
	Sulfone	LT 601		CAC006
		1.24+01		CAA017
		2.81+01		CAAD17
	ochloropropane	LT 301	0/00	CAC006
		17 2.4 +00	0/00	CAEDD6
			0/00	CACOOS
			0/00	CAEDO6
	an a tractic		0/00	CAC006
	Vapona Diisopropylmethyl Phosphonate	w.	6/6n 1	CAC006
		L1 7. +00	0/00 (CACOO6
			6/6m 1	CACDO6
			0/00 1	CAE 006
			0/00 1	CACODS
	tharin Ethylbenzene		1 09/9	CAE006
		11 5.00-02	2 09/9	82X017
				CACODE
		2.5		CAEODS
	o Triend			1

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Rocky Mountain Arsenal Program	Chemical Sewers South Plants
œ.	TASK 10
Fhavos Services Incorporated	Summery of Analytical Results

1002050307

Boring Number

01/27/88

Depth (ft)	Sample	Analytical Parameters	à	***************************************	Unite	Semple Number	
11.5-12.5	Soil	Malathion	LT	301	0/00	CAC006	
		1.4-Oxathiane	ב	6. +00	0/00	CAC006	
		Lead	-1	8.38+00	0/00	CAA017	
		Dichlorodiphenylethane	-1	301	. 6/en	CAC006	
		Dichlorodiphenyltrichloro-	ב	601	0/00	CAC006	
		ethane					
			-	10,	0/01	CACOOR	
		2-Chloro-1(2 4-04chlorophens)			0	7000	
		Vinvidiethy! Phosphates	,				
		Tetrach oroethere		2.5 -01	0/00	CAEDD6	
		Thiodiglycol	1	4.20+00	0/00	BZW012	
		Trichloroethene	Ľ	5.4 -01	0/00	CAE006	
		Ortho: @ Para-Xy)ene		00+ 6.4	0/00	CAEDOS	
		Zinc		7.21+01	B/B0	CAAD17	
15 5-16 5	1108		-	10- 1- 1	0/01	CAFON?	
)	•					.00010	
		1, 1, 2-Irichioroethane	ָר. ב		0/0	CAEGO	
		1,1-Dichloroethane	ב		0/00	CAE007	
		1,2-Dichloroethene	-1		0/00	CAED07	
		1,2-Dichloroethane	11	5.6 -01	0/0n	CAED07	
		s-X×1ene	ב	7.4 -01	0/00	CAED07	
		Aldrin	-		0/00	CAC007	
		Arsenic		3.48+00	0/00	822018	
		Atrezine	ב	301	0/00	CAC007	
		Bicycloheptadlene	LT	3.6 -01	0/00	CAE007	
		Benzene	ב	2.5 -01	0/00	CAEDO7	
		Carbon Tetrachloride	ב	2.5 -01	0/00	CAE:007	
		Cadmium	11	7.36-01	0/00	CAAD18	
		Methylene Chloride	<u> </u>	1.5 +00	0/60	CAE007	
		Chloroform	11	2.9 -01	0/00	CAE007	
		Hexach lorocyclopentad: ene	<u>-</u>	301	0/00	CACOD7	
		Chlorobonzene	ב	1.5 +00	0/00	CAE007	
		Chlordane	-		0/011	CAC007	
		p-Chlorophenylmethyl Sulfide	17		0/or.	CAC007	
		p-(hlorophenylmethyl Sulfoxide	LT	7. +00	0/60	CACHDZ	

1002030307

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CAE007 CAE007 CAE007 CAE007

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2.5 -01 5.4 -01 4.9 +00 8.88+01

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Tetrachloroethene Trichloroethene Ortho- & Para-Xylene Zinc CAF006 CAF006 CAF0F5

0/07

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1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane

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20.5-21.5

1002050307

Ibasco Serv	lbasco Services incorporated	at net	Rocky Mountain Arsenal Program	Pirogram		01/27/88
Summary of Analyti	Analytical Results	21112	Task 10 Chemica	Chemical Sewers South Plants	Plants	
Boring	Depth (ft)	Sample	Analytical Parameters	Results	Units	Sample Number
1002050307	15.5-16.5	5011	p-Chlorophenylmethyl Sulfone Chromium	LT 601	0/00	CAC007
			Copper	3.29+01	0 0	CAADIB
			Dibromochloropropare	. .	0/00	CAEDD7
			Dicyclobentadiene	LT 401	0/00	CACOO7
			Dicyclopentadiene	4.6	0/00	CAE DO 7
			Vapona		0/00	CAC007
			Ullsoprobylmethyl Phosphonate Dithiane	LT 301 LT 7. +00	0 0/00	CACOO7
			Oleidrin	LT 301	0/00	CACG07
			Dimethyldisulfide	2.0	0/00	CAED07
			Endrin		0/00	CAC007
			Ethylbenzene		0/60	CAE007
			Mercury	LT 5.00-02	na/a	BZX018
			Isodrin	LY 3, -01	0/00	CAC007
			Toluene		0/0r	CAE007
			Methylisobutyl Ketone		0/00	CAED07
			Malathion	LT 301	0/00	CAC007
			1.4-Oxethiene	LT 6. +00	6/60	CAC007
			Peel	LT 8.38+00	0/00	CAAD18
			Dichlorodiphenylethane	LT 301	0/00	CACO07
			Dichlorodiphenyltrichloro-	.	6/6n	CAC007
			ethane	•	•	1
			Parathion		0/00	CACD07
			2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates	LT 301	0/00	CAC007

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Results for some parameters may appear in more than one analytical fraction. Note:

Summery of Analytical Results Fbasio Services Incorrorated

1002050307

Boring

Chemical Sewers -- South Plants

Number	9 CAF006	O CAF006		9 CAD004	90 822024	O CADOO4	g CAF006		9 CAF006	9 CAGDOB	9 CAF006	'9 CAF006	G CADOD4	'9 CAF006	0 CADO04	G CADOO4		O CADDO4		O CAGDOS		G CAFIDE	-		'9 CADD04	CAD004	G CADDO4		9 CAF 006	9 CADDO4	9 CAF 306	9 CAT008	Q CANDO
Units	5/00	0/00	0/00	6/60	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/60	0/00	0/00	0/00	0/00	0/00	0/60	0/00	0/00	0/00	B/80	00/00	0/00	0/00	6/60	0/00	0/00	0/00	0/00	0/00	0/6n
Results	301	301	701		7.13+00	3.0 -01		₩.		7.36-01	701	301	6.0 -01			9.0 -01		3.0 -01	-	3,32+01	3.0 -01		1.0	₽)	3.0 +00	1.0 +00	0.7	3.0	801	5.0 - 01	301		3.0 -01
ě	ר	_	-1	-		_	-1	L	-	-	ב	ר	-1	ב	۲٦	רו	-1	1	-		-	- 1	11	ב	٢٦	11	נ	1	11	-	ב	L	_
Analytical Parameters	1,2-Dichloroethene	1,2 Dichloroethane	B-Xylene	Aldrin	Arsenic	Atrezine	Bicycloheptadiene	Benzene	Carbon Tetrachloride	Codmica	Methylene Chloride	Chloroform	Hexachlorocyclopent adjene	Chlorobenzene	Chlordane	p-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfoxide	p-Chlorophenylmethyl Sulfone	Chromitum	Copper	Dibromochloropropane	Dibromochloropropene	Dicyclopentadiene	Dicyclopentadiene	Vapona	Dilsopronylmethyl Phosphonate	Dithiene	Dieldrin	Dimethyldisuifide	Endrin	Ethylbenzene	Mercury	Isodrin
Type	5011																																
Depth (ft)	20.5-21.5																																

Ebasco, Services, Incorporated	Rocky Mointain Arsenal Program	01/27/88
Summery of Analytical Results	Task 10 Chemical Sevens South Plants	

Roting Nimber

1002050307

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Sample	CAF 006	CADDO4	CAC004	CAGG08	CAD004	CAD004	CADDO4	CAD004	700343	2004	CALUDO	CAF006	CAGOOB	CAF 007	CAF007	CAF 007	CAF007	CAF 007	CAF007	CAD005	CAHDD5	CAD005	CAF007	CAF007	CAF 007	CAG009	CAF 007	CAF007	CADOOS	CAF007	CADO05	CADOOS
Units	o/on	0/00	0/00	0/00	0/00	0/00	0/07	0/00	-7	0 /00	0 / 0	0/80	B/8n	0/00	0/00	0/00	0/00	a/an	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/07	0/0/0
Results	301	7.0 -01	3.0 -01	8.38+00	6.0 -01	5.0 -01	10-0			301	301	301	7,72+01	301		901		301	701	3.0 -01	2,50+00	3.0 -01	301	301	301	7.36-01	701	301	_	301	2.0 +00	3.0 -01
Œ.	-	-	<u>ا</u> ل	L	LT	ר ז	-	<u>, , , , , , , , , , , , , , , , , , , </u>		֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֡֝	-	נ		-	- H	. .	-	5	7	٦	ב	ב	1	1.1	11	<u>ר</u>	1	LT	1	ا بـ	۲,	
Aralytical Parameters	Z TO TO TO THE PARTY OF THE PAR	Maint 11 Source Colors			Dichlorodiphenylethane	Dichlorodiphenyltrichloro-	ethane	Perathion 2-chloro-1(2,4-Dichlorophenyl)	Vinyldiethyl Phosphates	Tetrachloroethene	Trichloroethene		Zinc		1, 1, 1-Irichioroetrare	1, 1, 2-Trichloroethane	1, 1-Dichtorochiane	1,2-Ulchiordethere 1,2-Dichloroethane			A10111		Bicycloheptadiene		Carbon Tetrachionide		Setto Chiloride	Chloroform	Hexach longex 10bent ad 1 me	Chlorobenzene	Chlordane	<pre>p.Chlorophenylmethyl Sulfido b.:hlorophenylmethyl Sulfoxide</pre>
Sample		1100												•	Set1																	
Depth (ft)		20.5-21.5													25.5-26.5																	

1002050307

Note: Results for some parameters may appear in more than one analytical fraction.

Ebasco Serv	Ebasco Services Incorporated	ated	Rocky Mountain Arsenal Program	Cogram		01/27/88
Summary of Analyt	Analytical Results	aults	fask to Chemical	(hemical Sewers South Plants	Plants	
Boring Number	Depth (ft)	Sample	Analytical Parameters	Results	Units	Sample
1002C\$0.307	25.5-26.5	5011	p-Chlorophenylmethyl Sulfone Chromium Copper Dibromochloropropane Dicyclopentadiene Dicyclopentadiene Vapona Disporopylmethyl Phosphonate Uithiane Dieldrin Dimethyldisulfide Endrin Ethylbenzene	LT 3.0 -01 2.79401 1.14401 2.79401 LT 3.0 -01 LT 3.0 +00 LT 3.0 +00 LT 3.0 +00 LT 3.0 +00 LT 3.0 -01 LT 5.0 -01 LT 5.0 -01		CADD05 CAG009 CAG009 CAD005 CAF007 CAD005 CAD005 CAD005 CAF007 CAF007 CAF007

			Lead	רו	8.38	ė	0/00	CAG009
			Dichlorodiphenylethane	ר	6.0	ė	0/00	CAD005
			Dichlorodiphenyltrichloro-	ב	LT 5.0 -01	10	0/6n	CAD005
			ethane					
			Parathion	ב	LT 9.0 -01	O1	0/00	CAD005
			2-Chloro-1(2,4-Dichlorophenyl)	ב	6.0	-O1	0/00	CAD005
			Vinyidiethy! Phosphates					
			Tetrachloroethene	ר	eri eri	10	0/00	CAF 007
			Trichloroethene	רו	, ,	io.	0/00	CAF 007
			Ortho- & Para-Xylene	-1	LT 301	٥	0/00	CAF 007
			Zinc		9.634	10	6/60	CAGD09
1002050308	10.8	Soil	1,1,1-Trichlornethane	-	1.1 30.1	ē	0/50	CAF DO8
			1,1,2-Trichlornethane	=	r,	Ē	0/60	CAFOOB
			1.1-Dichloroethane	-	o'	10.	0/00	CAFOOS

CADD05 CAF007 CADD05 CADD05

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3.0 -01 3. -01 3. -01 7.0 -01 3.0 -01

Isodrin Toluene Methylisobutyl Ketone Malathion 1,4-Oxathiane

Task 10

Summary of Analytical Results Ebasco Services Incorporated

Depth (ft)

Boring Number

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ن ۱ ۱۲ ا	Analytical Farameters	č	Results	Units	Number
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		•		,	
1100	1,2-Uichighoethene	-		200	20047
	1,2-Dichloroethane		301	0/00	CAF008
	m-Xylene	ב	701	0/00	CAFOOS
	Aldrin	1	3.0 -01	0/60	CADOO6
	Arsenic		3.61+00	0/00	CAH006
		•			
	Atrezine	ב		0 0	
	Bicycloheptadiene	ב ב		0/00	CAFOOS
	Benzene	ב	301	B/8 0	CAFOO8
	Carbon Tetrachloride	-	301	0/00	CAF008
	Codmium	-	7, 36-01	0/00	CAGD10
		-	7 -01	6/67	CAFOOR
	Chloroform	-	-	0/011	CAFOOR
	Margary Concording Agents	<u>-</u>	c	7 0	CAPOOF
	Chickette Acta	; -	4 KK+01	0 7 7 7	CAKDOS
		-	4	0/80	CAFOOR
		j			i
	Chlordene	-	2.0 +00	0/00	CAD006
	p-Chlorophenylmethyl Sulfide	_	9.0 -01	0/00	CADDO6
	p-Chlorophenylmethyl Sulfoxide	ב	3.0 -01	6/6n	CADO06
	p-Chlorophenylmethyl Sulfone	ב	3.0 -01	0/00	CAD006
	Chromium		1.10+01	6/Bn	CAG010
			1.10+01	0/0/7	CACOID
	Dibromorblocoppe	_	10-0	0/00	CADOOA
	Ofbromoch propropare	5	401	0/07	CAFOOR
	Dickelopentadiene	<u>ב</u>		0/00	CADOD6
	Dicyclopentadiene	-		6/60	CAF008
		1	3.0 +00	na/a	CAD006
	Difeopropylmethy! Phosphorate		1	0/07	CADOD6
				0/00	CAD006
	Dieldrin	-		0/00	CAD006
	Dimethyldisulfide	-1	801	0/00	CAF 308
	Fudrita	1.	5.0 -01	0/00	CAD006
	Fithylbenzene	ב		0/00	CAFOOS
	X-LU-LU-LU-LU-LU-LU-LU-LU-LU-LU-LU-LU-LU-	כ	5.00-02	0/00	CAI010
		-	10"	()	200040

Rocky Mountain Arsenal Program	Chemical Sewers South Plants
·	Task 10
Fhascu Services Incorporated	Summary of Analytical Results

1002050308

Boring

01/27/88

Sample Number	CAFOOB	CAFOOR	CAD006	CADDD6	CAG010	CAD006	CAD006		C+ 0006	CAD006		CAFOOS	CAK005	CAFOOS	CAF 008	CAGOIO	Box002		501018	80X002	800018	B0X002	B0X002	BOXD02	80X002	B0X002	800018	890018	800011	80X002	80X002	B0X002	COCYCE	2000	80X002	80X002
Units	0/00	מפ/ס	0/00	0/00	0/00	0/60	0/00		0/00	0/00		0/00	0/00	0/00	0/00	0/80	0/01	,	D/00	0 / 0 0	0/00	0/60	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0,00	2	0/00	0/00
Results	LT 301	LT 301	7.0	3.0		רו 6.0 -01			LT 9.0 -01	LT 6.0 -01		LT 301	LT 4.20+00		ĸ,	4.49	1 0 +02	20:07:	- 1	LT 301		2.5 +01	11 2. +00	ò	, p.,	'n	9.7	5.5 +01	3, 17+04	LT 301	-	1.1 3. +00		1.	4	7. +01
Analytical Parameters	Toluene	Methylisobutyl Ketone	Malathion	1,4-Oxathiane	Lead	Dichlorodipheralethene	Dichlorodiphenyltrichloro-	ethane	Perethion	2-Chloro-1(2,4-Dichloropheny1)	Vinyldiethyl Phosphates	Tetrachloroethene	Thiodigiycol	Trichloroethene	Ortho- & Para-Xylene	Zinc	Aldric		Armenic	Atroxine	Codmitte	Hexachlorocyclopentadiene	Chlordene	p-Chlorophenylmethyl Sulfide				Copper	U1bromoch]oropropane	Dibromochleropropane	Dicyclopentadiene	Vapona		Carachine Christian Crista a riobbiloriate	Dithiane	bieldrin
Sample	Soll																1 105	•																		
Depth (ft)	10.8																5. 9-6.8																			

1001MKE021

Ebasco Services	ices Incorporated	ated	Rocky Mountain Arsenal Program	ogram		01/27/88
Summary of	Summary of Analytical Results		lask 10 Chem		South Pients	
Boring Number	Depth (ft)	Sample	Analytical Parameters	Results	Units	Sample Number
1001MKF021	5.9-6.8	5011	Endrin Mercury Isodrin Malathion 1,4-Oxathiane	LT 501 2.34+00 2.5 +01 LT 701 LT 301	0/000	60X002 80\$018 80X002 80X002 80X002
			Lead Dichlorodiphenylethane Dichlorodiphenyltrichloro- ethane Parathion 2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphetes	7.3 +01 LT 601 2.5 +01 LT 901 2.5 +01	000 00	80V018 80X002 80X002 80X002 80X002
			Zinc	8.6 +01	ø/øn	800018
1001ME022	5,7-6.5	5011	Aldrin Arsenic Atrazine Cedmium Hexachlorocyclopentadiene	9.6 +01 1.86+02 LT 301 5.8 +00 1. +00	0/0n 0/0n 0/0n	80X003 80T019 80X003 80U019 80X003
			Chlordene p-Chlorophenylmethyl Sulfide p-Chlorophenylmethyl Sulfoxide p-Chlorophenylmethyl Sulfone Chromium	LT 2. +00 LT 901 LT 301 LT 301 LT 301	0/00	BOXOD3 BOXOD3 BOXOD3 BOXOD3 BOLO19
			Copper Dibromochloropropane Dibromochloropropane Dicyclopentadiene	1.5 +03 3.67+02 3.67+02 8.1 +01 LT 1. +00 I.T 3. +00	0/00	BOUD19 BOV012 BOX003 BOX003
			Diisopropylmethyl Fhosphonate Dithiane Dieldrin Endrin Mercury	LT 1. +00 LT 401 1. +01 LT 501 7.00-01	00/00	80X003 80X003 80X003 80X003 80S019

Rocky Mountain Arsenal Program	Chemical Sewers South Plants
ř	Task 10
Ebesco Services Incorporated	Summary of Analytical Results

01/27/88

Number	Depth (ft)	Sample Type	Analytical Parameters	Res	Results	Units	Sample
1001MKE022	5.7-6.5	Sofl	Isodrin		1. +01	0/00	80X003
			Melethion	LT	701	e/en	Bax003
			1,4-Oxathiane	LT	301	0/00	Baxoos
			Lead		8.9 +01	0/00	800019
			Dichlorodiphenylethane	ב	601	0/00	BOXOOS
			Dichlorodiphenyltrichloro-		7. +00	0/00	BoxDO3
			ethane			;	
			Parathion		2. +01	0/00	BOXDOS
			2-Chiero-1(2,4-Dichlorophenyl)	L.T	601	0/00	BOXOOS
			Vinyldiethyl Phosphates				
			Zinc		1.2 +02	0/00	800019
1001MKE023	5.8-6.8	5011	Aldrin		1. +02	0/00	BQX004
			Arsenic		1,32+02	0/00	B 01020
			Atrazine		1. +01	0/00	80X004
			Cedmium		5.8 +00	ø/øn	800020
			Hexachlorocyclopentadiene	ר	601	6/ 6 0	B0X004
			Chlordane	F.I	2. +00	0/00	Boxook
			p-Chlorophenyimethyl Sulfide	-		0/00	BOXO04
				; <u>-</u>		0/07	ROXOOA
						0 / 0 /	NO XOX
					•	0/00	800020
			Copper		8.4 +01	0/00	800020
			Dibromoch loropropane		6.90+03	0/07	800013
			Dibromochloropropane		1.0 +02	0/00	B0X004
			Dicyclopentadiene	L	1. +00	0/00	BOXO04
			Vepone	ר	3, +00	0/00	80X004
			Diisopropylmethyl Phosphonate	LT	1. +00	0/00	B0X004
			Dithiane	L	401	0/00	80X004
			Dieldrin		3. +01	0/00	BOX004
			Endrin	_	503	0/00	80X004
			Mercury		4.70+00	0/00	805020
			Isodrin		2.5 +01	0/00	80X004
				-		0/00	ROXO04

Ebason Services Incorporated	ces Incorpora	ated	Rocky Mountain Arsenal Program	mara.		01/27/88
Summery of Analytical		Results	fast 10 Chemical Severs	Sewers South Plants	Plents	
Boring Number	Depth (ft)	Sample	Analytical Parameters	Results	Units	Semple Number
1001MKF023	8. 8-6. 8	5011	Lead Dichlorodiphenylethane Dichlorogiphenyltrichloro- ethane Parathion 2-Chloro-1(2,4-01chlorophenyl)	3.8 +01 LT 601 2.3 +01 LT 901 2.5 +01	0/00	89U020 89X004 89X004 89X004 89X004
			71nc	2.3 +02	e/en	Bounzo
1001MKE031	8. 7-9. 8.	5011	Aldrin Arsenic Atrezine Cadmium Hexachlorocyclopentadiene Chlorophenylmethyl Sulfide p-Chlorophenylmethyl Sulfoxide p-Chlorophenylmethyl Sulfoxide Chromium	1. 47402 4. 400 5.1 400 LT 601 LT 2. 400 LT 901 LT 301 LT 301	00000 00000	BRC002 BRC002 BRC002 BRC002 BRC002 BRC002 BRC002
			Copper Dibromochloropropane Dibromochloropropane Diryclopentadiene	1.8 +01 7.0 +01 9.48+01 LT 1. +00 LT 3. +00	00000	8RC002 8RC002 8RC002 8RC002
			Diisoprobylmethyl Phosphonate Dithiane Dieldrin Endrin Mercury	LT 1. +00 LT 401 1. +02 LT 501 5.82-01	00000	BRC002 BRC002 BRC002 BRC002

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BRC002 BRC002 BRC005 BRK005

00000

2.5 +01 7. -01 3. -01 2.4 +01 4. +00

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Isodrin Majathion 1,4-Oxathiane Lead Dichlorodiphenylethane

Summery of Analytical Results

Marin Marin

1001MKE033

1001MKE031

Boring

Task 10

Chemical Sewers -- South Plants

01/27/88

Semple	BRCD02	BRC002	BRC002		BRKOOS	BRC003	BRU017	BRC003	BRK006	BRC003	BRC003	BRC003	BRC003	BRCDD3	BRK006	BRK006	BRC003	BRG006	BRC003	BRC003	BRCOO3	BRCD03	BRC003	BRC003	BRJ006	BRC003	BRC003	BRC003	BRK006	BRC003	BRCOOS	
Units	e/an	0/00	B/8n	•	0/00	0/00	0/80	0/00	0/00	8/ 6 n	0/00	0/00	0/00	0/00	6/60	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	6/6n	0/00	0/00	e/en	0/00	0/00	
Results	2.5 +01	901	4. +00	•	3.8 +01	1. +02	2.50+00	301	2.8 +00	601	2. +00	901	301	301	1.1 +01	7.5 +01	9.	1.31+01	1. +00	3. +00	1. +00	401		501	2.66-01	2.5 +01	701	3, -01	1.1 +01	601	501	
ag		L					1	-		1	1.1	ב	ב	ב					ב	LT	-1	ב		-1			ב	-1		LT	LT	
Analytical Parameters	Dichlorodiphenyltrichloro- ethane	Parathion	2-Chloro-1(2,4-Dichlorophenyl)	Vinyldiethyl Phosphætes	/1nc	Aldrin	Arsenio	Atrezine	Cadmium	Hexachlorocyclopentadiene	Chlordane	p-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfoxide	p-Chlorophenylmethyl Sulfone	Chromium	Copper	Dibromochloropropane	Dibromochloropropane	Dicyclopentadiene	Vapona	Diisopropylmethyl Phosphonate	Dithiane	Dieldrin	Endrin	Menouny	Isodrin	Malathion	1,4-0xathlane	peel	Dichlorodiphenylethane	Dichlorodiphenyltrichloro-	ethane
Scaple Type	5011					5011																										
Depth (ft)	8.7-9.5					9.6-9.6																										

Note: Results for some parameters may appear in more than one analytical fraction.

Ebasco Services Incorporated

Summary of Analytical Results

1001MKE042

1001MKEU:33

Boring Number

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01/27/88

Chemical Sewers -- South Plants

185K 10

9.6-9.9 Soll 7.7-8.2 Soll				8 17 8 9 1	Colts	
	2-Chloro-1(2,4-Dichlorophenyl)		6	90	0/00	BRCODS
	Zinc		80.5	8.3 +01	6/60	BRK006
	Aldrin	-	ņ	-01	0/00	BOMOOS
	Arsenir		1.2	1.22+02	0/00	BOTO15
	Atrazine	_	κ,	- 0 1	e/en	80M005
	Codmium		5.3	00+	6/6n	BOU015
	Hexachlorocyclopentadiene			+01	6/6 0	BOMOOS
	Chlordane	11	2	9	0/00	800008
	p-Chlorophenylmethyl Sulfide	-1		10-	0/00	BOM005
	p-Chlorophenylmethyl Sulfoxide	-	۳,	-01	0/60	80M005
	p-Chlorophenylmethyl Sulfone	-1		-01	0/60	80M005
	Chromium	1	5.2	00+	6/6 0	B 00015
	2000		3.6	3.6 +01	0/00	800015
	Ditromochioropropane		5.44	5.44+02	0/07	800008
	Dibromochloropropane		2.3	+02	0/00	BOWDOS
	Dicyclopentadiene	ב		00+	0/00	BOWDOS
	Vapona	ני	'n	00+	0/00	BOMODS
	Diisopropylmethyl Phosphonste	_	-	00+	0/00	800005
	Dithiane		4	-01	0/00	BOWOOS
	Dieldrin		۳,	+01	0/00	BOWODS
	Endrin	ב	δ.	-01	0/00	BOWDOS
	Mercury		9. 1	9.19-02	0/00	B0S015
	Isodrin		3.7	+01	6/60	8099008
	Melethion	-1			0/00	BOWDOS
	1.4-Oxathiane	-	'n	<u>-</u> 0	0/00	BOWOOS
	Lead	-1		101	0/00	BOUDIS
	Dichlorodiphenylethane		œ	-01	0/00	80M008
	Dichlorodiphenyltrichloro-		Ξ.	+01	0/00	80M08
	ethane					
	Perethion	ר		-01	0/00	BOMDOS
	2-Chloro~1(2,4-Dichlorophenyl)		(i	+01	6/6n	800008
	Vinyldiethyl Phosphates					

804007 801017

0/00

2. +01 1.68+02

Arsento

Aldrin

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7.6-7.9

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BOWDOS BOWDOS

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Dichlorediphenyltrichloro-

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2-Chioro-1(2,4 Oichiorophenyl) Vinyldiethy) Phosphates

Parathion

ethane

01/27/88 BOWOO6 BOTO16 BOWOO6 BOWO16 BOWDO6 BOWDO6 BOWDO6 BOWDO6 Sample Number 800016 BUWN06 BOMO06 **BOV009** BOWDD6 BOWOO6 BOWCO6 **BOW006** BUMDD6 BOMO06 805016 BOWON & BOWDD6 80U016 BOWD06 BOUDDE Chemical Sewers -- South Plants 0/00 0/07 00/07 B/80 0/00 0/00 0/00 0/00 0/00 0/07 0/00 0/00 9/95 0/05 0/00 **0/00** 0/00 0/00 0/00 9/87 Units 2. +01 1.52+02 900 90 4.2 +01 6.99+01 900 +00 -01 OO+ 8 7.7 +00 Ç ö ţ -01 3.94-01 -O1 -0 **1**0 -01 ç ٠ Results 2 23 ø Rocky Mountain Arsenal Program בי ٦ p-Chlorophenylmethyl Sulfide p-Chlorophenylmethyl Sulfoxide p-Chlorophenylmethyl Sulfone Diisopropylmethyl Phosphonate Hexachlorocyclopentadiene Dichlorodiphenylethane Analytical Parameters Dibromochloropropane Dibromochloropropane Dicyclopentadiene 1,4-0xathiane Malathion Arsenic Atrazine Cadmium Chlordone Chromium Dithiane Dieldrin Isodrin Mencury lask 10 Endrin Aldrin Vapona Copper Sample Type 5011 Summary of Analytical Results Ebasco Services Incorporated Depth (ft) 7.7-8.2 1001MKE043 Boring Number

Results for some parameters may stainar in more than one analytical fraction. Note:

Ebasco Serv	Ebasco Services Incorporated	ated	Rocky Mountain Arsenal Program	egrem				01/27/88
Summary of	Summary of Analytical Results	sults	Task 10 Chemical Severs	Sewers	;	South	South Plants	
Boring Number	Denth (ft)	Sample	Analytical Peremeters	ě	Results	.	Units	Sample
1001MKE044	7.6-7.9	5011	Atrazine Cadmium Hexachlorocyclopentadiene	ָרַ .	50 50 50 50 50 50 50 50 50 50 50 50 50 5		000/000	80W007 80U017 80W007
			(hlord ane p-Chlorophenylmethyl Sulfide	ו ר	% o.	90-	0/0n	80W007
				1	w) i	-01	e/en	BOWOO?
			p-chlorophenylmethyl sulfone Chromium	ב ב	5. S.	7 9	0/	80U017
			Copper Dibromochloropropere		5.9		0/00	BOU017
						Ş	1	
			Ulbromochloropropane Dicyclopentadiene	1	<i>i</i> =	5 0	0 0/00	BOWDO?
			Vapona	L	r)	00+	0/00	80M007
			Diisopropylmethyl Phosphonate	֖֡֡֝֝֡֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֝֝֡֓֓֓֓֓֡֡֡֝֓֓֓֡֡֜֜֝֓֡֡֡֡֡֓֓֓֡֡֡֡֡֓֓֡֡֡֡֡֓֜֜֝֡֡֡֜֜֝֓֡֡֡֡֡	- ,	₽ q	0/00	BOWDO7
			Olthighe	3	J	5	b	/nompa
			Dieldrin		~	90+	0/00	B0W007
			Endrin	1	6		0/00	BOW007
			Mercury		2.5		0/00	80\$017
			Isodrin Malathion	L.1	<u>.</u> .	- - - - - - - - - - - - - - - - - - -	0 0 0	BOWD07
				-		Ę	0,01	BOLIDO 3
				- L	· -		200	ROHO!
			Dichlorodiphenvlethane	ב נ			0/00	BOWD07
			Dichlorodiphenyltrichloro-		3.4	+01	0/00	BOM007
			ethane	•	(i	•	
			Perathion	٥	o.	-01	0 /00	80M007
			2-Chloro-1(2,4-Dichlorophenyl)	LT	Ġ	-01	6/6n	Bowoo7
			Vinyldietnyl Phosphales Zinc		7.2	+01	0/00	800017
1001MKE061	8.2-8.8	Sof 1	Aldrin		2.4	2.4 +02	0/00	BOW002
			Arsenic		7.3	7.38+02	0/00	801012
			Atravine	L	~ 5 1		0/00	80U002
				-	9 6 8	5 5	0/0n	BGU012
					;	• }	•	

Note: Results for some parameters may appear in more than one analytical fraction.

Summery of Analytical		Results	Task 10 Chemical Severs	Sewers	South	South Plants	
Boring	Depth (ft)	Samble	Anglytical Parameters	Re	Results	Units	Sample
1001MKE 061	8.2-8.8	Soi 1	Chlordene D-Chlorophenylmethyl Sulfide		2. +00	0/00	BOU002
						0/00	BOW002
				ב	•	0/00	BOM002
			Chrosics		2.1 +01	6/60	890012
			Copper		1.5 +02	0/00	600012
			Dibromochloropropane			0/00	Bovoos
			Dibromoch! oropropane		n	0/00	BOMO02
			Dicyclopentadiene	-		0/00	BOWD02
			Vapona	-1	3. +00	0/00	BOW002
			Disapropylmethyl Phasphonate	۲	1. +00	0/00	BOMO02
			Oithiane	۲,	401	0/00	BOW002
			Dieldrin	-1	301	0/00	B0W002
			Endrin	ב	501	0/00	BOW002
			Mercury		8, 59+00	0/60	B05012
			Isodrin		2. +01	0/00	Bow002
			Malathion	-	701	0/60	BOW002
			1,4-Oxathiane	-1	301	0/00	BOW002
			Lead		^	0/00	B 00012
			Dichlorodiphenylethane		7. +00	B/BN	BOWDD2
			Dichlorodiphenvitrichloro-	1,1	501	0/00	BOWOD2
			ethane	-	6	0/011	200
			2-Chloro-1(2,4-Dichlorophenyl)	;		0/00	B0W002
			Vinyldiethyl Phosphates				
			Zinc		4.8 +02	0/00	800012
1001MKE062	8.2-9.2	Soil	Aldrin		3.0 +02	0/00	804003
			Arsenic		5.99+02	0/00	BOT013
			Atrazine	-1	301	0/00	BOWDOS
			Cadmium			0/00	B0U013
			Hexach Lorocyc Lopent adlene		601	o/an	BUMOD 3
			(h)orden•	-1	2. +00	6/60	BOW003
			p-(hlorophenylmethyl Sulfide	L.1	901	0/00	BOWDOS

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Simbary of	Summary of Analytical Results	3400	lask 10 cher	Chemical County	South P	÷
But Iron Mumber	Usepth (11)	Table 1	Analytical Parameters		1145	=
Rich Mr. F. O. C. Z.	7. 7. 8.	no.	erchterege openie och toregenoran operitädlene	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		~-~00
			Dijsopropylmethy Phosphonate Dithiane Diolohin Pobrin Morcury	11 5	1. +00 6111 1. +01 501	C I
			Leadr fin Malmthion 1.4-Oxattilane Lead Firker ostphenyletiane	11 3.	4 10 10 10 10 10 10 10 10 10 10 10 10 10	
			furthluridiphenyttrichtoro. officie Parathion 2 Chloro 1(2,4-Dichlorophenyt) Vloytefettyt Phosphates	11 11 11 11 11 11 11 11 11 11 11 11 11	10-	

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Summary of Analytical Results Ebasco Services Incorporated

Chemical Sewers -- South Plants

Boring	Depth (ft)	Sample	Andlytical Parameters	A.	Results	Unita	Sample
1035MkE071	5.7-6.4	Soll	Vapone Diisopropylmethyl Phosphonate Dithiane Dieldrin Endrin		3. +00 1. +00 401 301 501	_	8R0008 8R0008 8R0008 8R0008
			Mercury Isodrin Malathion 1.4-Oxathiane Lead Dichlorodiphenyltrichloro- ethane Parathion	בר ברבים	6 16		BR1007 BRD008 BRD008 BR1015 BRD008 BRD008 BRD008
			Z-Chioro-1(z,4-Dichiorophenyi) Vinyidiethyi Phosphates Zinc	בֿ	4.92+01	1 09/9	6R0008
1035MKE072	5.7-6.7	5011	Aldrin Arsenic Atrazine Cadmium Hexachlorocyclopentadiene		301 5.0 +00 301 7.36-01 601	11 00/0 11 00/0 11 00/0	8RH005 8RH005 8RH007 8R 1016 6R 0009
			Chlordane p-Chlorophenylmethyl Sulfide p-Chlorophenylmethyl Sulfoxide p-Chlorophenylmethyl Sulfone Chromium		2. +00 901 301 301 1.40+01	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6RD009 6RD009 6RD009 6RD009
			Copper Dispranchloropropane Disyclopentadiene Vapona Diisopropylmethyl Phosphonate	י ייייי	1. 31+01 301 1. +00 3. +00 1. +00	0 00/0 0 00/0 0 00/0 0 00/0	8R1016 8R0009 8R0009 8R0009 8R0009

Note: Results for some parameters may appear in more than one analytical fraction.

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Nummery of Analytical Results

1035MKE072

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01/27/88

South Plants
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Task 10

a n f	1		4 040AB 050CA A50C5	
Sample Number	BRDDD9 BRDDD9 BRJDDB BRDD09	BRD009 BRT016 BRD009 BRD009 BRD009	841016 870010 870010 870010 870010 870010 870010 870010 871017 871017 871017	BR0010 BR0010 BR0010 BR0010
Units	0/00	000000000000000000000000000000000000000		0/000
Results	301 501 5.00-02 301 701	301 1.44+01 601 501 901	301 301 301 301 7.36-01 601 301 1.46+01 1.55+01 3. +00 3. +00	401 301 501 5.00-02 301
S.	בבבבב	5 55 5 5	בבבב בבבב בבבב	15155
Analytical Perameters	Dieldrin Endrin Mercury Isodrin Malathion	1,4-Oxathiane Lead Lead Dichlorodiphenylethane Dichlorodiphenyltrichloro- ethane Parathion 2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates	Aldrin Arrenic Atrazine Cadmium Hexachlorocyclopentadiene Chlorophenylmethyl Sulfide D-Chlorophenylmethyl Sulfide Chlorophenylmethyl Sulfone Chromium Copper Chlorophenylmethyl Sulfone Chromium Copper Ulfisoprophenylmethyl Sulfone Chromium Copper Ulfisoprophenylmethyl Phosphonate	Dithiane Dieldrin Endrin Mercury Isodrin
Sample Type	\$011		1106	
Depth (ft)	5.7-6.7		5. 8. 6. 8.	

1035MKE073

Ebasco Services In	ices Incorporated	nted	Rocky Mountain Arsenal Program	HOULDH			01/27/88
Summary of Analyti	Analytical Results	sults	Tosk 10 Chemical Sewers	نوها	;	South Plants	
Bortna	Depth (ft)	Sample Type	Analytical Parameters	, a	Results	Units	Sample Number
1035MKE073	6 0 0	5011	Malathion 1,4-Oxathiane 1cad lead Dichlorodiphenylethane ethane	55 55	701 301 1.48+01 601 501	-01 ug/g -01 ug/g +01 ug/g -01 ug/g -01 ug/g	6470/10 8470/10 8470/7 6400/10
			Perathion 2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates Zinc	רן די	901 601 5.69+01	-01 ug/g -01 ug/g +01 ug/g	BRDD10 BRDD10 BR1017
1001MKE191	3.6-4.4	1103	Aldrin Arsenic Atrazine Cadmium Hexachlorocyclobentadiene	ללל ל	301 7.12+00 301 7.36-01 601	-01 +00 -01 -01 -01 -01 -01 -01	8RC004 8RU005 8RC004 8RI005 BRC004
			Chlordene D-Chlorophenylmethyl Sulfide D-Chlorophenylmethyl Sulfoxide D-Chlorophenylmethyl Sulfone Chromium	לולל	2. +00 901 301 1. 74+01	+00 us/s -01 us/s -01 us/s +01 us/s	8RC004 8RC004 8RC004 8RC004 8RI005
			Copper Dibromochloropropane Dicyclopentadiene Vapona Dilsopropylmethyl Phosphonate	ון היינו נו	7. 11+01 301 1. +00 3. +00 1. +00	+01 ug/g -01 ug/g +00 ug/g +00 ug/g +00 ug/g	BR 1005 BRCD04 BRCD04 BRCD04 BRCD04
			Dithiene Dieldin Endrin Mercury Isodrin	555 5	401 301 501 3.52+00	-01 ug/q -01 ug/q -01 ug/q +00 ug/q -01 ug/q	BRC004 BRC004 BRC004 BRL005 BRC004
			Malathion 1,4-Oxathiane 1,ad Dichlorodiphenylethane		701 301 1.33+01 601	-01 ug/g -01 ug/g +01 ug/g -01 ug/g	BRC004 BRC004 BR 1005 BRC004

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Note: Results for some parameters may appear in more than one analytical fraction.

Task 10

Summary of Analytical Results Ebasco Services Incorporated

1001MKE192

1001MKE191

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Chemical Sewers -- South Plants

Sample Number	BRC004	BRC004	BRC004		BRIOOS	BRC005	BRU007	BRC005	BR1006	BRC005	BRCOOS	BRC005	BRC005	BRC005	BR1006	BR1006	BRC005	BRC005	BRC005	BRC005	BRC005	BRC005	BRC005	BRL 006	BRCOOS	BRCOOS	BRCDOS	RR 1006	BRCODS	BRCOOS		BRCOOS	BRC005	
S Units N	8 6/60	0/00			0/00	8 0/00	_				8 0/00	_	8 0/60		0/00	0/00			_	_	8 0/00				8 0/60	0/00	B 0/60		_			00/00 B		
Results	501	901	601		9.74+01	301	5	301	7.36-01	601	2. +00	901	301	301	6.53+00	4.40+01	301	1. +00	3. +00	1. +00	401	301	501	1.75-01	301	701	301	8.38+00	601			901	601	
8	-1	ב	ר			<u>ר</u>		-1	ב	1	נ	ר	-	ב	רן		ב	ב	ב	ב	ב	ר	ב		-1	LT	۲٦	-	-	ב		1	-1	
Analytical Parameters	Dichlorodiphenyltrichloro- ethane	Parathion	2-Chioro-1(2,4-Dichlorophenyl)	Vinyidiethyl Phosphates	Zinc	Aldrin	Arsenic	Atrazine	Codmitum	Hexachlorocyclopentadiene	Chlordene	p-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfoxide	p-Chlorophenylmethyl Sulfone	Chromium	Copper	Dibromochloropropane	Dicyclopentadiene	Vapona	Diisopropylmethyl Phosphonate	Oithiane	Dieldrin	Endrin	Mercury	Isodrin	Melethion	1,6-0xathiane	Lead	Filchlorodiphenylethmas	Dichlorodiphenyltric pro-	ethane	Parathion	2-Chloro-1(2.4-Dichlorophenyl)	Vinyldiethyl Phosphates
Sample	Soft					Sofl																												
Depth (ft)	3.6-4.4					3.6-4.6																												

Ebasen Services I	tees Incorporated	ated	Rocky Mountain Arsenal Program	ogram		01/27/88
Summary of	Summary of Analytical Results	sults	Task 10 Chemical	Chemical Sewers South Plants	Plants	
Boring	Depth (ft)	Sample	Analytical Parameters	Results	Units	Sample Number
1001MKF192	3.6-4.6	Soft	Zinc	9,48+01	8/8n	BR 1006
1001MKE 193	3.4-4.2	Soi 1	Aldrin Arsenic Atrazine Cadmium Hexachlorocyclopentadiene	LT 301 1.39+01 LT 301 LT 7.36-01 LT 601	00000	BRC006 BRU008 BRC006 BR 1007 BRC006
			Uniondane D-Chlorophenylmethyl Sulfide D-Chlorophenylmethyl Sulfone D-Chlorophenylmethyl Sulfone Chromium	LT 2. +00 LT 901 LT 301 LT 301 LT 6.53+00	00000	BRC006 BRC006 BRC006 BRC006
			Copper Cibromochloropropane Discordinane Distant Distant Distant Distant Endrin Malathion 1,4-0xathiane Lead Dichlorodiphenylethane Lead Dichlorodiphenylethane Parathion Parathion	1.1 301 1.1 301 1.1 300 1.1 300 1.1 501 1.1 501 1.1 301 1.1 301 1.1 501 1.1 601 1.1 601 1.1 601 1.1 601		BR 1007 BR 1006 BR 1006 BR 1006 BR 1007 BR 1007
1001MKE201	4.2-4.8	5011	Vinyidietnyi rhosphates Zinc Aldrin Arsenic	8.48+01 601 4.35+00	0/6n 0/6n	BR1007 BOX005 BO1021

Ebasso Servi	Ebasio Services Incorporated	ated	Rocky Mountain Arsenal Program	manco		01/27/88
Summery of Analyti	nalytical Results	sults	Task 10 Chemical Sewers	Sewers South Plants	Plants	
Boring Number	Depth (ft)	Sample Type	Analytical Parameters	Results	Units	Semple Number
1001MKE201	4.2-4.8	5011	Atrazine Cadmium Hexachlorocyclopentadiene Chlordane P-Chlorophenylmethyl Sulfide	LT 301 LT 7.36-01 LT 601 LT 2. +00 LT 901	00000	BOXO05 BRB005 BOX005 BOXO05 BUX005
			p-Chlorophenylmethyl Sulfoxide p-Chlorophenylmethyl Sulfone Chromium Copper Dibromochloropropane	LT 301 LT 301 1.42+01 3.22+01 601	0/00	BGXG05 BGXG05 BRBG05 BRBG05 BGXG05
			Dicyclopentadiene Vapona Diisopropylmethyl Phosphonate Dithiane	LT 1. +00 LT 1. +00 LT 1. +00 LT 401 LT 301	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	B0X005 B0X005 B0X005 B0X005 B0X005
			Endrin Mercury Isodrin Malathion 1.4-Oxathione	LT 501 1.72-01 LT 301 LT 701 LT 301	00000	BOX005 BRA005 BOX005 BOX005 BOX005
			Lead Dichlorodiphenylethane Dichlorodiphenyltrichloro- ethane Parathion 2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphales	2.94+01 LT 601 LT 501 LT 901 LT 601	000000	688005 80X005 80X005 80X005
1001MKE202	4.0-4.5	5011	Zinc Aldrin Arsenic Atrezine Cedmium Hexachlorocyclopentadiene	1.47+02 LT 301 LT 2.50+00 LT 301 LT 7.36-01 LT 601	0 00000	BRB005 B0X006 B0X006 BRB006 BXX006

Note: Results for some parameters may appear in more than one analytical fraction.

Summary of Analytical Results Ebasco Services Incorporated

Chemical Sewers -- South Plants

Number	Depth (ft)	Type	Analytical Parameters	8	Results	Units	Semple Number
1001MKE202	4.0-4.5	Soil	Chlordene	נ	2. +00	0/00	80X006
			p-Chlorophenylmethyl Sulfide	ב	901	D/00	80X006
				ב	301	0/00	BOXODS
			p-Chlorophenylmethyl Sulfone	ר	301	0/00	BOXDO
			Chromium	-	6.53+00	0/00	BR8006
			Copper		7.96+01	0/00	BRB006
			Dibromochloropropane	ב	301	0/00	B0X006
			Dicyclopentadiene	<u>-</u>		0/00	80X006
			Vapona	ב		0/00	80X006
			Diisopropylmethyl Phosphonate	ָ		0/00	80X006
			Dithiane	-	401	0/00	BOXOU
			Dieldrin	1		0/00	80×006
			Endrin	ב		0/60	B0X006
			Mercury	-	8	0/00	BRA006
			Isodrin	ב	301	0/00	BOX006
			Relathion	-	701	0/00	ROXODE
			1.6-0xethiene	<u> </u>		0/00	80X006
			T 4 4	Ì	=	0/01	ACCRET
			Dichlorodinhenvlethene	-	101.5	0/01	Roxoo
						\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	200
			ethane	<u>.</u>		200	900489
			Parathion	L.	901	0/00	BQX006
			2-Chloro-1(2,4-Dichlorophenyl)	_	601	0/00	80X006
			Vinyidiethyl Phosphates				
			Zinc		1.64+02	0/00	BRB006
1001MKE203	4.1-5.0	5011	Aldrin	ב	301	0/00	B0X007
			Arsenic		3.40+00	8/6n	BOT023
			Atrazine	ר	301	0/0n	80×007
			Cadmium	17	7.36-01	0/00	BRB007
			Hexachlorocyclopentadiene	ב	601	8/80	80×007
			Chlordene	ר	2. +00	0/00	80X007
			n-Chlorophenylmethyl Sulfide	-	901	0/00	89X007
				-		0/011	BOXO07
				<u>۔</u> نــ نـ	3.	0/00	B0X007

Results for some parameters may appear in more than one assixtical fraction.

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Ebasco Services	ices Incorporated	ated	Rocky Mountain Arsenal Program	rogram			01/27/88
Summery of	Summery of Anglytical Results	sults	Task 10 Chemical	Secretary		South Plants	
Bortna Number	Depth (ft)	Sample	Analytical Parameters	Results	t s	Units	Sample Number
1001MKE203	4.1-5.0	50:1	Chromium	-	1.77+01	0/00	BRB007
•			Copper		9	0/00	BRB007
			Dibromochioropropere	,, ,,	ē Ş	0/07	80X007
			Vapona Vapona			9/97	Box007
			Diisopropylmethyl Phosphonate	1.1	00+	0/07	Box007
			Dithiane			0/00	B0X007
			Dieldrin			8/00	80X007
			Endrin	LT S.		0/00	80X007
			Mercury	.	1.25-01	0/00	BRAD07
			Isodrin	LT 3.	-01	0/00	80×007
			Melathion			0/00	B0X007
			1,4-0xathiane	LT 3.	-01	0/00	80x007
			Lead		8	0/00	BRB007
			Dichlorodiphenylethane	LT 6.	- 0	0/00	B0X007
			Dichlorodiphenyltrichloro-	LT 5.	-01	0/00	80X007
			ethene				
			Perethion	LT 9.		0/07	B0X007
			2-Chloro-1(2,4-Dichlorophenyl)		-01	0/07	80X007
			Vinyidiethyl Phosphates Zinc	7.	7.59+02	e/en	BRB007
10020003	5.2-6.2	1108	1.1.1.1.trichloroathane		ę	0/07	BMC005
	i i	•	1.1.2-Trichloroethene	1		0/0/1	BMC005
			1,1-Dichloroethane	L1 %		0/00	BWC005
			1,2-Dichloroethene	LT 3.		0/00	BMC005
			1,2-Dichloroethane	LT 3.	-01	0/00	BMC005
			B-Xy]ese	11 7.	-01	0/00	8MC008
			Aldrin	2	Ģ	0/00	8V2007
			Arsenic		2.50+00	0/00	BVK021
			Atrazine		٠ 1	0/00	802007
			Bicycloheptadiene	LT 3.	ī,	0/00	BHC005
			Renzene	LT 3.	-01	0/00	BWCOOS
			Carbon Tetrachloride	LT 3.		0/60	8MC008
			Cadmium		7.36-01	B/8n	800015

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Summery of Analytical Results Ebasco Services Incorporated

Sample Type

Depth (ft)

Boring Namber Chlorobenzene

Chlordane

Chromium

Copper

Chloroform

5011

3.2-4.2

1002000403

00 + 00 P 10--01 -01 ----5.00-02 þ +01 -01 8 ĸ. ----ここここ これに _ Diisopropylmethyl Phosbhonate Dichlorodiphenylethane Methyllsobutyl Ketone **Dibromochloropropane** Dicyclopentadiene Dicyclopentadiene Dimethyldisulfide 1,4-Oxathiane Endrin Ethylbenzene Malathion Dithiane Dieldrin sodrin. Mercury oluene

BMC005

0/05

0/05 0/05 **BMC005 BVL016** BWC005 **BWC005**

BV2007

0/00 0/00 0/00

BVZ007

0/00 0/00

> . ئ د ---Perathion 2-Chioro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates

BV2007 BV2007

0/0n

-01

-01

Dichloradiphenyltrichlora-

BVV015

0/00 0/60 0/00

372007 **8VZ007** BV2007 **BV**2007

0/00 0/00

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Ehmsco Servi	Ebasco Services Incorporated	ated	Rocky Mountain Arsenal Program	Arsenal Pr	# 6 .100			01/27/88
Summary of A	Summary of Analytical Results	sulta	lask 10	Chemical Sewers	Sewers	;	South Plants	
Boring	Depth (ft)	Sample Type	Anglytical Parameters		, e	Results	Units	Sample Number
1002000403	3.2-4.2	5011	Tetrachloroethene Thiodiglycol Trichloroethene Ortho- & Para-Xylene Zinc		ווון	301 4.20+00 301 301 5.36+01	0 0 0 0 0	6WCD05 6WCD16 6WCD05 6WCD05 6WV015
1002Dri0403	A. 2-9. 2	1100	Ichloroethane Ioroethane	lene Sulfide Sulfoxide Sulfoxide	לל ללללל ל ללל ללללל ללללל	66. 96. 96. 96. 96. 96. 96. 96. 96. 96.		BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6 BUCOO6
			Chromium Copper Dibromochloropropane Dibromochloropropane Dicyclopentadiene		נולד ל	1.16+01 1.01+01 301 401 1. +00 301	000 000	BVV016 BVV016 BVZ008 BWC006 BVZ008

Chemical Sewers -- South Plants Rocky Mountain Arsenal Program Tesk 10 Summary of Analytical Results Fbasco Services Incorporated

01/27/88

Sample Number	8VZ008 8VZ008 8VZ008 8VZ008	BVZ008 BWC006 BVL017 BVZ008 BWC006	BWZ008 BWZ008 BWZ008 BWZ008 BWZ008 BWZ008 BWZ008	BWC006 BWC006 BWC007 BWC007 BWC007 BWC007 BWC007
Units No	000000			
Results	LT 3. +00 LT 1. +00 LT 401 LT 301 LT 801		28 28 D	1 3.68 + 01 1 3.68 + 01 1 3 01 1 3 01 1 3 01 1 7 01
Analytical Parameters	Vepone Diisopropylmethyl Phosphonate Dithlane Dieldrin	Endrin Ethylbenzene Mercury Isodrin Toluene	Methyllsobutyl Ketone Malathion 1.4-Oxathiane Lead Dichlorodiphenyltrichloro- ethane Perathion 2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates Tetrachloroethene Thiodiglycol	Trichloroethene Ortho- & Para-Xylene Zinc 1,1,1-Trichloroethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane M-Xylene Aldrin
Sample	5011			5011
Depth (ft)	8.2-9.7			17.7-13.2
Boring	10020110403			1002001403

Note: Results for some parameters may appear in more than one analytical fraction.

1002000403

Boring

01/27/88

Semple Number	BWC007	200316	SVV017	BMC007		SWCUO!	6 0020 9	800018	BWCD07	BV2009	8V2009	872009	872009	BVV017	800017	872009	BWC007	BV2009	BWC007	BV2009	8VZ009	BVZ009	RV2009	BWC007	8VZ009	6MC007	BVL018	BVZ009	BWC007	6WC007	BV2009	872009	800017	8v2009
Units	0/0n) (9 0	0/00	77	0/00	0/0n	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	6/60	0/00
Results	11 301	· •	7.36		,	'n		LT 3.55+01	LT 301	LT 2. +00	1.7 9, -01	₩.	r,	1.95+01	1.38+01	LT 3, -01	LT 401	٦.	LT 301	LT 3. +00	LT 1. +00	LT 401	LT 301	6 0	LT 501	LT 301	1.7 5.00-02	LT 301		LT 501	LT 701	LT 301	1.57	1.1 601
Analytical Parameters	Bicycloheptadiene Renzene			Methylene Chloride			Hexachlorocyclopentadlene	Chloroscetic Acid	Chlorobenzene	Chlordene	p-Chlorophenylmethyl Sulfide			Chromium	Copper	Dibromochloropropane	Uibromochioropropane	Dicyclopentadiene	Dicyclopentadiene	Vepone	Dilsopropylmethyl Phosphonate	Dithiane	Dieldrin	[:]methyldisulfide	Endrin	Ethy Ibenzene	Mercury	Isodrin	Toluene	Methyllsobutyl Ketone	Malathion	1.4-Oxathiane	read	Dichlorodiphenylethane
Sample Depth (ft) Type	12.2-13.2 Soil																																	

Ebason Serv	Ebasco Services Incorporated	ated	Rocky Mountain Arsenal Program	ogram			01/27/88
Summary of Analytic	7	Results	Chemical Sewers	1	outh F	South Plants	
Boring	Depth (ft)	Sample	Analytical Parameters	Results		Units	Sample Number
1002000403	12.2-13.2	5011	Dichlorodiphenyltrichloro-	LT 5.	-01	6/60	BVZ009
			ethane Parathion		-01	0/00	BV2009
			2-Chloro-1(2.4-Dichlorophenyl)	LT 6.	- -	۵/۵n	8V2009
			Tetrachloroethene	LT 3.	-01	0/00	BWC007
			Thiodigircol	LT 4.20+00	0	0/60	800018
			Trichloroethene		i P	na/a	BUC007
			Ortho- & Para-Xylene	LT 3.	-01	0/00	8MC007
			Zinc	8.22+01	1 0+	B/6n	8vv017
1002000403	17.2-18.2	5011	1.1.1-Trichloroethane	L1 3.	-01	0/00	BUCOOS
			1,1,2-Trichloroethane	11 3.	-01	0/6n	BWCDOS
			1.1-Dichloroethane		-01	0/00	BMCDOB
			1,2-Dichloroethene	LT 3.	-01	B/B n	84C008
			1.2-Dichloroethane		-01	0/00	BWC008
			8-XY]ere		-01	0/00	BWCOOB
			Aldrin		-01	0/00	6v2010
			Arsenic		00+	0/05	BVK024
			Atrezine	L1 3.	-01	0/20	672010
			Bicycloheptadiene		-01	0/00	8MC008
			Benzene		ņ	0/00	BWC008
			Carbon Tetrachloride		-01	B/8n	BWC008
			(admium		-01	0/00	BVV018
			Methylene Chloride Chloroform	LT 701 LT 301		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	BWC008
			Hexach loncoxclopentadiene	LT 6.	٠ <u>٠</u>	0/00	8V2010
			Chloroguetic Acid		+01	9/80	600019
			Chlorobenzene		-01	0/00	BWCOOB
			Chlordane	LT 2.	Ç0 <u>+</u>	0/00	BVZQ10
			p-Chlorophenylmethyl Sulfide	LT 9.	-01	0/00	BV2010
				LT 3.	-01	0/00	872010
			p-Chlorophenylmethyl Sulfone	- 7 .5.	10-	0/00	8v2010
			Chromium	2.09+01	÷01	0/00	BVV018
			Copper	111+5-5-1	=	0 /00	91000

in more than one analytical fraction. Results for some parameters may appear Note:

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22.2-23.2

1002000403

Depth (ff)

Borring Number

01/27/88

Summary of Analytical Results fask 10

Chemical Sewers -- South Plants

Analytical Parameters	ž	Results	σ,	Units	Samp le Number
a-xylene	5	, eo	5	0/01	BWD002
Aldrin	-	ю.	-01	0/00	BWA002
Arsenic	-1	2.5	2,50+00	6/60	BWF 005
Atrazine	ב	'n	-01	0/00	8WA002
Bicycloheptadiene	L	4.	-01	6/8n	BWD002
Benzene	ן	ĸ,	-01	0/00	BWD002
Carbon Tetrachloride	-	ь.	-01	6/60	BWD002
Cadmium	-	7.3	7.36-01	0/00	800019
Methylene Chloride	_	۶.	000+	0/00	8MD002
Chloroform	L	'n	-01	0/00	BWD002
Hexachlorocyclopentadlene	۲	ė.	-01	0/60	BWA002
Chlorometic Acid	<u>-</u>	3.5	3.55+01	0/00	800020
Chlorobenzene	-	Ϊ.	00+	8/6n	BWD002
Chlordane	נ	4	00+	0/00	BWA002
p-Chlorophenylmethyl Sulfide	-1	o.	-01	0/60	8WA002
p-Chlorophenylmethyl Sulfoxide	1	ь,	-01	0/00	BWA002
	-	ĸ,	-01	0/00	BWA002
Chromium	-	6.5	6.53+00	0/00	800019
Copper		1.8	1.87+01	0/00	800019
Dibromochloropropane	-1	w.	-01	0/00	8WA002
Dibromochloropropane	ר	۶.	00+	0/00	BWD002
Dicyclopentadiene	ב	-	00+	0/00	BWA002
Dicyclopentadiene	_	۲.	-01	0/00	BWD002
Vapona	_	'n	00+	0/00	BWA002
Diisopropyimethyl Phosphonate	ר	-	00+	0/00	8WA002
Dithiane	-	4	-01	6/60	BWA002
Dieldrin	٦	ń	<u>-</u> 0-	0/60	BWAD02
Dimethyldisulfide		Š	10+	0/00	BWDOUZ
Endrin	_	۶.	-01	0/00	BWAOD2
Ethylbenzene	-		-01	6/60	BWD002
Mercury	۲,	5.0	5.00-02	6/60	BVL020
I soult in	כ	Þγ	-01	0/00	BWA002
Tolugue	_	×,	<u>-</u>	0/00	BWn:02

Note: Results for some parameters may appear in more than one analytical fraction.

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Summary of Analyti	Analytical Results	sults	Task 10 Chemical Severs	1	South Plants	
Boring Number	Depth (ft)	Sample	Anelytical Parameters	Results	Units	Sample Number
1002000403	22.2-23.2	So11	Melathion 1.4-Oxathiane Lead Dichlorodiphenylethane	7. 3. 6.	0000	BMAD02 BMAD02 BVVD19
			Dichlorodiphenyltrichloro- ethane Parathion 2-Chloro-1(2.4-Dichlorophenyl)	LT 501 LT 901 LT 601	0/0n 0/0n	8WA002 6WA002 8WA002
			Vinyldiethy! Phosphates Tetrachloroethene Thiodigiyco! Trichloroethene	LT 301 LT 4.20+01 LT 501	0/00	BWD002 BV0020 BWD002
			Ortho- & Pars-Xylene Zinc	LT 5, +00 7,30+01	0/00	BWD002 BVV019
1002000601	12.5-13.5	5011	1,1,1-Trichloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane	LT 601 LT 201 LT 2. +00 LT 2. +00 LT 601	0/000	BUVDD4 BUVDD4 BUVDD4 BUVDD4 RUVDD4
			m.Xylene Aldrin Arsenic Atrazine Bicycloheptadiene	LT 801 LT 301 LT 5.0 +00 LT 301 LT 601	0/000	BUV004 BUM014 BVC021 BUW014
			Benzene Carbon Tetrachloride Cadmium Methylene Chloride Chloroform	LT 301 LT 301 LT 7.36-01 LT 2. +00 LT 301	0/000	8UVDD4 8UVDD4 8UVDD4 8UVDD4
			Hexachlorocyclopentadiene Chlorobenzene Chlordane p-Chlorophenylmethyl Sulfide p Chlorophenylmethyl Sulfide	LT 301 LT 1. +00 LT 601 LT 6. +00 LT 7. +00	0/000	BUW014 BUV004 RUW014 BUW014 BUW014

Secretary.

Note: Results for some parameters may appear in more than one analytical freelien.

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Summery of Analytical	Analytical Results	ø.	Task 10 Chemical Sewers		South Plants	
Borina	Sample Depth (ft) Type	910	Analytical Parameters	Results	Units	Sample Number
1002000601	•	1	p-Chlorophenylmethyl Sulfone Chromium Copper Dibromochloropropene	LT 601 LT 6.53+00 4.65+01 LT 2. +00 LT 301	0/0n 0/0n 0/0n	BUM014 8VJ010 8VJ010 BUV004 BUM014
			Dicyclopentadiene Dicyclopentadiene Vapona Diisopropylmethyl Phosphonate Dithiane	LT 701 LT 801 LT 301 LT 7. +00	0/07	8UV004 8UM014 8UM014 8UM014 8UM014
			Dieldrin Dimethyldisulfide Fndrin Ethylbenzene Mercury	LT 301 LT 301 LT 401 LT 5.00-02	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	81,000 4 81,000 4 81,000 4 80,000 4
			Isodrin Toluene Methylisobutyl Ketone Melethion 1.4-Oxathiane	LT 301 LT 301 LT 701 LT 301 LT 6. +00	0/0n 0/0n 0/0n	BUMO14 BUVOD4 BUVOQ4 BUMO14 BUMO14
			Lead Dichlorodiphenylethane Dichlorodiphenyltrichloro- ethane Parathion 2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates	3.62+01 LT 301 LT 601 LT 401 LT 301	000000000000000000000000000000000000000	8VJ010 8UM014 8UM014 8UM014 8UM014
			Tetrachloroethene Thiodiglycol Irichloroethene Ortho- & Para-Xylene Zinc	L7 301 L7 2.55+00 L7 501 L7 5. +00 L1 8.53+01	0/000	8UV004 BBG003 BUV004 BUV004 BVJ010
100200060)	17.5-18.5 Soil	-	1.1.1-Trichloroethane	17 401	6/6n	80V005

Note: Results for some parameters may appear to more than one analytical fraction.

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Depth (ft) 17.5-18.5

Boring

1002000601

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01/27/88

Sample						Semple	
Type	Analytical Parameters	ĸ	Results	•	Units	Number	
				Ì			
5011	1.1.2-Trichloroethane		8	-01	0/00	800005	
	1,1-Dichloroethane	1		8	0/00	BUVOOS	
	1,2-Dichloroethene	ר	2	00+	B/60	80,000	
	1.2-Dichloroethane	_	9	-01	0/00	BUVOOS	
	m-Xylene	-1	æ	-01	6/60	800005	
	Aldrin	-1	٠,	-01	B/80	BUW015	
	Arsenic	ב	5.0	00+	0/00	BVC022	
	Atrazine	-	٠,	-0 10	0/00	BUM015	
	Bicycloheptadiene	ב	4.	-01	0/00	BUVOOS	
	Benzene	,	m,	ō	B/BN	800008	
	Carbon Tetrachloride	1.1	'n	-01	0/00	BUVOOS	
	Codmium	ב	7.3	7.36-01	0/60	607011	
	Methylene Chloride	-1	6	90	0/07	BUVOOS	
	Chloroform	1	₩,	-01	0/00	800005	
	Hexachlorocyclopentadiene	L1	₩.	Ģ	0/00	BUM015	
	Chlorobenzene	LT		9	0/00	800005	
	Chlordane	-	ė	-0	0/00	BUM015	
	p-Chlorophenylmethyl Sulfide	LT	4	00+	0/00	BUM015	
	p-Chlorophenylmethyl Sulfoxide	ב	۲.	00+	0/00	BI MO15	
	p-Chlorophenylmethyl Sulfone	LT	ø	-01	0/00	BUW015	
	Chromium	<u>, , , , , , , , , , , , , , , , , , , </u>	9	6.53+00	0/00	803011	
	Copper		4.2	4.24+01	0/00	803011	
	Dibromochloropropane	1	۶.	00+	0/00	8170005	
	Oibromachloropropane	ב	۵.	-01	0/00	BUM015	
	Dicyclopentadiene	L	۲.	-01	0/00	800005	
	Dicyclopentadiene	L	4	-01	0/00	BUWO15	
	Vapona	1	er.	٠ <u>٠</u>	0/00	BUMO15	
	Diisopropylmethyl Phosphonate	-	'n.	-01	0/00	RUM015	
	Dithlane	ב	۲.	00+	0/00	BUM015	
	Dieldrin	וי	r.	-01	0/00	BUW015	
	Dimethyldisulfide	1.1	2.	ī.	0/60	800008	
	Endrin	-	ĸ;	-01	0/60	BUMO15	
	Ethylbenzene	<u>-</u>	4	ō	0/00	800008	
	Mercury	_	Š.	5.00-02	0/00	BVD012	

Ebasco Services	dees Incorporated	Oted	Rocky Mountain Argenal Program	me do do		01/27/88
Summary of	Summary of Analytical Results	sults	Task III Chemical Sewers	Sewers South Plants	Plants	
Bor Ind Number	Depth (ft)	Sample	Analytical Parameters	Results	Units	Sample
1002000401	17.5-18.5	5011	Isodrin	ъ,	6/6n	BUM015
			Toluene	'n,	0/00	BJV005
			Meletylisobutyl Netone	1	0 0	BUVUUS
			1,4-Oxathiene	; .j	0/00	BUM015
			Lead	1,23+01	0/00	803011
			Dichlorodiphenylethane	L7 301	0/00	BUMO15
			Dichlorodiphenyltrichloro-	è	0/00	BUM015
				,	7,01.	8
					0 1	010000
			<pre>Z=Lnioro-i(z,a-Dichiorophenyi) Vinyldiethyl Phosphates</pre>		0 /00	610400
				10,	9/91	20071
			Thiodialveo)		0/00	BBG004
			Trichloroethene		0/00	BUV005
			Ortho- & Para-Xylene	٠. د	0/00	80000
			Z1nc	1.05	0/00	BVJ011
*003000403	7 K-2%			*0- * *	0/01	YOU AND THE
10000007001		•	1.1.0-Trichloroethere		0/00	BUV006
			1.1-Fichloroethane	۶.	0/00	80000
			1,2-Dichloroethene	LT 2. +U0	0/00	800008
			1,2-Dichloroethane		6/6n	611/006
			9-XV 6-30	LT 801	0/00	BUVDD&
			Aldrin	L1 301	0/00	813X002
			Arsento	5.0	0/00	BVC023
			Atrazine	r,	0/00	BUX002
			Bicycloheptadlene	LT 401	0 /00	BUV006
			Benzene	רז 310	0/00	800006
			Carbon Tetrachloride	5.8 -01	0/0n	BUV006
			Cadmium	7.35	0/00	BV J012
			Methylene Chloride	5.	0/00	BUV006
			Chloroform	LT 301	0/6n	BUV006
			Hexachlorocyclopentadiene	LT 601	0/00	BUX002

Note: Results for some parameters may appear in more than one analytical fraction.

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Depth (1t)

Boring

23.5-24.5

Analytical Parameters Analytical Parameters Chlorobenzene Chlorobhenylmethyl Sulfide D-Chlorophenylmethyl Sulfone Chromium Chro		South 11. +000 2. +011 3011 3011 7011 7011 7011 7011	South Plants ults Units 1. +00 ug/g 301 ug/g 301 ug/g 4. 62+01 ug/g 6. 53+00 ug/g 6. 53+00 ug/g 701 ug/g 701 ug/g 701 ug/g 701 ug/g 701 ug/g 701 ug/g 701 ug/g 701 ug/g 701 ug/g 701 ug/g 701 ug/g	Sample Number BUV006 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002
, , , , , , , , , , , , , , , , , , ,	1	\$25.00 00 00 00 00 00 00 00 00 00	Units Un	Sample Number BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002 BUX002
t		23 + 00 - 01 - 0		8UV006 8UX002 8UX002 8UX002 8UX002 8UX002 8UX002 8UX002 8UX002 8UX002 8UX002 8UX002 8UX002 8UX002
U		25 40 40 40 40 40 40 40 40 40 40 40 40 40		8UXDD2 8UXDD2 8UXDD2 8VJD12 8UXDD2 8UXDD2 8UXDD2 8UXDD2 8UXDD2 8UXDD2 8UXDD2
		53+00 -01 -01 -01 -01	00000 0000	8VJ012 8VJ012 8UV006 8UV006 8UV006 8UX002 8UX002 8UX002 8UX002
				80.000 80.0000 80.0000 80.0000 80.0000 80.0000
		55 55 55 55 55 55 55 55 55 55 55 55 55		80x002 80x002 80x002 80x002 80x002
		9999	00/00	80X002 80X002 80X002 80X002
		3 6 5	0 0 0	BUXOO2 BUXOO2
 -	4		,	BUXD02
ב י	'n	i 0	0/07	1
5 .		10+	0/00	BUVOD6
נינ	ų 4	5 5	0 0 0 0 0 0	BUX002 BUV006
כב	ທີ່ກ່	5.00-02 301	0/0n	BVD013 BUXO02
L.	'n.	-01	0/00	80000
		?	0/07	BUV006
i		301	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6UX002 6VJ012
רז	Ġ	-01	0/00	BUX002
Dichlorodiphenyltrichloro-	ξ.	-01	0/00	BUX002
	o	-01	0/00	BUX002
	6.		0/00	
L.T.		2.55+00 501	6/6n 6/6n	886005 8UV006
, my 1.)		6 %	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	

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01/27/88

Sample Number	8UV006	710	8UV007	80000	80000	BUV007	BUV007	BUV007	BUXOOS	BVC024	BUXOO3	BUVO07	800007	BUV007	BVJ013	BUV007	BUV007		BUV007	BUXOOS	BUXOO3	BUXOO3	BUXOOS	BV3013	BV3013	BUV007	BUXOO3	800007	BUXOOS	8UX003	8UX003	80x003	
S	2	ò	3	5	Ś	ź	á	5	ĝ	8	2	ž	Ş	ź	B	5	Ş		5	8	Ŝ	Ş	9	B Š	8	Š	9	5	9	8	2	9	
Un1ts	0/00	2	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	o/on	0/01	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	8/80	0/00	0/00	0/01	0/07	0/00	
	5. +00	70.4	-01	Ģ	0	9	<u>-</u> 0	-	-01	00+	-01	-01	-01	ō-	5-01	00+	-01	Ę	9	00+	-01	-Q	-0	6.33+00	10+0	00+	-01	-01	00+	00+	50+	-01	
Results	6	3	4.	,		٠,	ė	œ.	ь,	5.0	٠, نو		₩	*	7.36-01	۶.	, ,	•	; _	ς.	٠.	₩.	ب	6.33	3.00+01	5.	٠. د	۲.				٠.	
£	5		רו	ב	_	ב	ב	<u>_</u>	ב	-1	ב	ב	1	-	-	1	-1	-	; -	-	ב	ר	1.1	-		<u>-</u>	-	1	=		=	١,	
Analytical Parameters	Ortho- & Pere-Xylene	2117	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichlaroethane	1,2-Dichloroethene	1.2-Dichloraethane	B-Xylere	Aldrin	Arsenic	Atrazine	Bicycloheptadiene	36002 8000 8000 8000	Carbon Tetrachloride	Codmium	Methylene Chloride	Chloroform		Chlorobenzene	Chlordane	p-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfoxide	p-Chlorophenylmethyl Sulfone	Chromium	Copper	Dibromochloropropane	Ofbromochloropropane	Dievelopentadiene	Dicyclopentadiene	Vacous	Disappopy Imethy Phosphopate	Dithiane	
Sample Type	Soft		Soft																														
Depth (ft)	23.5-24.5		29-30																														
Bor fra Number	1002000401		1092000601																							•							

Note: Results for some parameters may appear in more than one analytical fraction.

1002000601

Boring

01/27/88

Sample	BUV007	BUXUUS	80000	1000	BUXOUS	8UV007	800007	BUXDOS	BUXOOS	80,3013		BUX003	BUXD03	FOCOM	200700	BUXDOS	BUV007		886006	800007	BUVDG7	BV 3013	BOY002	B0T024	BQY002	BRBOOS	B0Y002	B0Y002	BQY002	B QY002	BQY002	BRB008	BRBOOS	B0Y002	807002
Units	0/00	0 . 000	0 / 0 /	0 / 0	D/07	0/00	0/00	0/07	0/00	0/00		0/07	B/8n	-/	0 .	0/00	0/00		0/00	0/00	0/00	0/00	D/87	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	e/en	0/00	0/00	0/00
Results	8	'n,		2.00	LT 301	10- 5	,	: ,	: •	2.84		LT 601	LT 501	,	o.	LT 601	, T	i	LT 2.55+00		LT 5. +00	7.98+01	10- 2	2.5	11 3 -01	7.3		LT 601		LT 7. +00	LT 601	1.25+01	1.89+01	10- 2 1-	, 4.
Analytical Parameters	Dimethyldisulfide	Endrin	Ethylben, ne	Mercury	Isodrin	•	Ioluene	Methylisobutyl Retone	Malathion	1.4-Oxathlene		Oleh Secol sheny lethane	Dichlorodiphenyltrichloro-	ethane	Parathion	2-Chloro-1(2,4-Dichlorophenyl)	Vinyldiethyl Phosphates	Tetrachloroethene	1000 0 101	Tricklesse	Cathol & Dans-XV lens	Zine		Aldrin	Arsenic	Atrazine	cadmium Hexachlorocyclopentadiene		Children in the contract of th					Copper	Dibromochloroprobane Dicyclopentadiene
Semple Type	Sofi	! !																						5011											
Depth (ft)	29-30	}									•													6- K											

1002MKE211

Note: Results for some parameters may appear in mere than one analytical fraction.

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Summary of Analytical Results

Fhasco Services Incorporated

Chemical Sewers -- South Plants

Boring Number	Depth (ft)	Sample	Analytical Parameters	Results	Units	Semple
002MKE211	8-9	5011	Vapone Difaceropylmethyl Phosphonate Difhiene Dieldein	LT 301 LT 301 LT 7. +00 LT 301	0/000	BQY002 BQY002 BQY002 BQY002 BQY002
			Mercury Isodrin Melathion 1,4.Oxalhione Lead	Lt 5.00-02 LT 301 LT 301 LT 6. +00	0/00 0/00 0/00	BRA008 BQY002 BQY002 BQY002 BRB008
			Dichlorodiphenylethane Dichlorodiphenyltrichloro- ethane Parathion 2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates Zinc	LT 501 LT 601 LT 401 LT 301	0/00	80002 80002 80002 80002 80002
1002MKE212	7.8-9.0	Soil	Aldrin Arsenic Atrazine Cedmium Hexschlorocyclopentadiene	LT 301 LT 2.50+00 LT 301 LT 7.36-01 LT 301	00000	BQYDD3 BRUDD5 BQYDD3 BRBUD9 BQYDD3
			Chlordene p-Chloropherylmethyl Sulfide p-Chloropherylmethyl Sulfoxide p-Chloropherylmethyl Sulfone Chromium	LT 601 LT 4. +00 LT 7. +00 LT 601 1.39+01	0/000	BQYD03 BQYD03 BQYD03 BQYD03 BRBD09
			Copper Dibromochloropropane Dicyclopentadiene Vapona Diisopropylmethyl Phosphonate	1.69+01 LT 301 LT 601 LT 301 LT 301	000000000000000000000000000000000000000	846009 807003 807003 807003 807003

Note: Results for some parameters may aproar in more than one analytical fraction.

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Note: Results for some parameters may appear in more than one analytical fraction.

Phasen Serv	fbasco Servinas Incorporated	ated	Rocky Mountain Arsenal Program	Program		01/27/88
Summery of Analyti	Analytical Results	sults	Task 10 Chemica	Chemical Sewers South Plants	Plants	
Boring Number	Depth (ft)	Sample	Analytical Parameters	Results	Units	Sample Number
1002MKF.212	7.8-9.0	5011	Dieldrin Fndrin Mercury Isodrin Malathion 1.4-Oxathiane Lead Dichlorodiphenylethane Dichlorodiphenyltrichloro-	LT 301 LT 301 LT 301 LT 301 LT 6. +00 LT 6. +00 LT 6. +00 LT 601		80Y003 80Y003 80Y003 80Y003 80Y003 80Y003 80Y003
			ethane Parathion	LT 401	0/00	807003
			2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates Zinc	LT 301 5.83+01	0/00	BOYDO3 BRBOD9

Summary of Analytical Results Ebasco Services Incorporated

Depth (ft)	TYDE	Analytical Parameters	Results	sults	Units	Number
<i>န</i> ဂုံ	-	drin senic sazine dmium		301 2.50+00 301 7.36-01	0/00	BRD002 BRU013 BRD002 BR 1012
		Hexachiolocyclopentadiene		•nı	0 /0	E 40002
		Chlordane		2 +00	0/00	BRD002
					0/00	BRD002
		p-Chlorophenylmethyl Sulfoxide		301	0/60	BRDOOZ
		p-Chlorophenylmethyl Sulfone Chromium	<u>.</u>	3. U1 1.21+01	8/8n	6RC002 BRI012
		Copper	•	1.41+01	6/6n	BRIO12
		Dibromorhloropropane		301	0/011	BRD002
		Literalopentadiena	ר .	1. +00	0/00	BRD002
		Vaporia			0/00	BRDOO2
		Diisopropylmethyl Phosphonate			0/00	BR0002
		Dithiane	רז	401	0/60	BRD002
		Dieldrin	ר ב	301	0/00	BRD002
		Endrin	-1	501	0/00	BRD002
		Mercury	(4	2.46-01	0/00	8RJ016
		Isodrin	ר ר	301	0/00	BRD002
		Metathion	1.1	01	0/00	BRD002
		1.4-Oxathiane		301	0/00	BRD002
		Lead		8.38+00	0/07	BR1012
		Dichlorodiphenylethane		601	0/00	BRD002
		Dichlorodiphenyltrichloro- ethane	<u>.</u>	501	0/00	BRD002
		Parathion	۱ ۱	901	6/80	BR0002
		2-Chloro-1(2,4-Dichlorophenyl)	5	601	0/00	BRD002
		Zino	u ,	5.53+01	0/00	BRI012
5.2 6.1	So 11	Aldrin		301	0/00	BRD003
		Arsenic		2.50+00	0/00	BRU014
		Atrazine		301	6/ 6 0	BRDDO.3
			-	7 10.01	0/01	FILLIA

Note: Results for some parameters may appear in more than one analytical fraction.

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Summary of Analytical Results Ebasco Services Incorporated

5.2-6.1 5113 6.9-5.8	Boring	Depth (ft)	Sample	Analytical Parameters	ě	Results	Units	Samp I e Number
5.2-6.1 Soil Chievachiorocyclocentediene [17 601 ug/e] Chilorophenylmethyl Sulfade [17 901 ug/e] D-Chlorophenylmethyl Sulfade [17 901 ug/e] Chromium Chromium (1.28+01 ug/e) Chromium Chromium (1.28+01 ug/e) Chromium Chromium (1.28+01 ug/e) Dibromochlorophene [17 301 ug/e] Uithiame (17 301 ug/e) Uithiame (18 301 ug/e) Uithiame (19 401 ug/e) Uithiame (19 501 ug/e) Uithiame (19 601 ug/e) Uithiame (10 601 ug/e)			,					
Chiloropheny lampthy Sujiide 17 2 400 usys	036MKE112	5.2-6.1	So 1 1	Hexach lorocyclopentadiene	ר	9		BRDOOS
De-Chlorophenylaethyl Sulfide				Chlordene	-1	2. +0	_	BRDD03
D-Chlorophenylmethyl Sulforide					-			BRDOOS
Chromium Chromium Chromium Cobser Chromium Cobser C					11			BR0003
Corper Corper Corper Dispensediene Dispensediene Dispensediene UI 1. +00 ua/g Dispensediene UI 1. +00 ua/g Uithiane Uith					ר			BRD003
Conser Conser Conservation of the control of the				Chromium		1.28+0		BRIOLS
Disconding Dis				Copper		7.90+0		BR1013
Dispense				Dibromochloroprobane	-	3.		BRD003
Use Use				Dicyclopentadiene	ר	-		BRD003
Disperopylmethyl Phosphonate UI 1. +00 ug/g Uithlane Uith				Vapone	ב	'n		BRDOOS
Uithlane				Ulisopropylmethyl Phosphonate	ר	1.	_	BROODS
Endrin Brackery Fraction				Uithiane	ב			BRD003
Endrin 1.501 ug/g Isodrin Isodrin I.4.0xathion I.4				Dieldrin	,			8RD003
Isodrin				Endrin	۲٦			BRD003
190drin 1910 17 2 -01 ug/g 1,4-Oxathiane 17 2 -01 ug/g 1,4-Oxathiane 17 3 -01 ug/g 1,4-Oxathiane 17 3 -01 ug/g 1,4-Oxathiane 17 3 -01 ug/g 1,51+01 ug/g				Mercury		6.29-0		BRJ017
Melathion				Isodrin	11			BREODS
Lead Lead Lead Dichlorediphenylethane Dichlorediphenyltrichloro ethane Parathion 2-Chloredicthyl Phosphates Zinc Arsenic Arsenic Chloredene Chloredpenylmethyl Sulfide LT 301 ug/g LT 501 ug/g LT 901 ug/g LT 601 ug/g LT 301 ug/g Attaction Chloredpenylmethyl Sulfide LT 601 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g				Melethion	11			8RD003
1.51+01				1,4-0xathiane	1			RRDOO3
Dichlorodiphenyltrichloro- LT 601 ug/g ethane Parathion 2-Chloro-1(2.4-Dichlorophenyl) LT 601 ug/g 2-Chloro-1(2.4-Dichlorophenyl) LT 601 ug/g 2-Chlorotheryl Phosphates Zinc Arsenic Arsenic Atrazine Cadmium Chlorotherylmethyl Sulfide LT 2. +00 ug/g LT 2. +00 ug/g LT 2. +00 ug/g LT 2. +00 ug/g LT 2. +00 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g				Lead		1.51+0		BRI013
Dichlorodiphenyltrichloro- ethane Parathion 2-Chloro-1(2.4-Dichlorophenyl) LT 601 ug/g Vinyldiethyl Phosphates Zinc Arsenic Arsenic Atrazine Cadmium Chlorodent Chlorophenylmethyl Sulfide LT 2. +00 ug/g LT 3.5-01 ug/g				Dichlorodiphenylethane	ר			BRDOOS
### ### ##############################				Dichlorodiphenyltrichloro-	ב			BRDOO3
Parethion Parethion				ethane				
2-Chloro-1(2.4-Dichlorophenyl) LT 601 ug/g Vinyldiethyl Phosphetes Zinc Zinc Arsenic Arrazine Cadanum Cadanum Chlorophenylmethyl Sulfide LT 2. +00 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 301 ug/g LT 401 ug/g LT 601 ug/g LT 601 ug/g LT 601 ug/g LT 700 ug/g LT 701 ug/g				Parathion	1			BRDOOS
Vinyldiethy! Phosphetes Zinc Zinc 4.9-5.8 Soi! Aldrin Arsenic Atrazine Cadmium Cadmium Chlordane Chloropheny!methy! Sulfide LT 2. +00 Lq 2. 40 Lq 3. 40 Lq 4. 40				2-Chloro-1(2.4-Dichlorophenyl)				BRD003
Aldrin				Vinyldiethyl Phosphøtes		1		1
4.9-5.8 Soil Aldrin Arsenic Arrazine Cadmium Hexachlorocyclopentadiene LT 2.50+00 ug/g LT 301 ug/g LT 7.36-01 ug/g LT 7.36-01 ug/g LT 7.36-01 ug/g LT 601 ug/g Chlordane Chlorophenylmethyl Sulfide LT 2. +00 ug/g p-Chlorophenylmethyl Sulfide LT 301 ug/g				Zinc		5. 32+0		BRIO13
Arsenic Atrazine Cadmium Cadmium LT 301 ug/g LT 7.36-01 ug/g Hexachlorocyclopentadiene LT 601 ug/g Chlordane Chlorobenylmethyl Sulfide LT 2. +00 ug/g p-Chlorobhenylmethyl Sulfide LT 301 ug/g	3.36MKE113	4.9-5.A	Soil	Aldrin	ב			BRN004
LT 301 ug/g LT 7.36-01 ug/g LT 601 ug/g LT 2. +00 ug/g LT 901 ug/g LT 301 ug/g				Arsenic	-	2.50+0		BRU015
LT 7.36-01 ug/g LT 601 ug/g LT 2. +00 ug/g LT 901 ug/g LT 901 ug/g				Atrazine	-	30		BR 0004
LT 601 ug/g 1.T 2. +00 ug/g 1.T 901 ug/g 1.T 301 ug/g				Cadmium	ר	7.36-0		BRIDIA
1,T 2, +00 ug/g LT 9, -01 ug/g 1,T 3, -01 ug/g				Hexachlorocyclopentadiene	-1			ERD004
LT 9, -01 ug/g				Chlordane	-			BRD004
L1 3, -01 ua/a				p-Chlorophenylmethyl Sulfide	-			BRD004
				r-Chlorophenylaethyl Sulfour	-			BRDODA

Note: Results for some parameters may appear in more than one analytical fraction.

Summery of Analytical Results Fbasco Services Incorporated

1036MKE113

Boring Number

8. 4. 400 2. 50 +001 3. 6 +01 3. 6 +01 3. 6 +01 3. 75 +02 4. 9 +00 5. 45 +01 6. 9 +00 7. 9 +00 7. 9 +00 7. 9 +00 7. 9 +00 7. 9 +00 7. 9 +00 7. 9 +00 7. 9 +00 7. 9 +00 7. 9 +00 7. 9 +00 7. 9 +00 7. 9 +00 7. 9 +00 7. 9 +00	Semple	BRI016	BR1014	BRD004	BR0004	RRD004	10000	BRD004	BR D004	BRD004	BRD004	8RJ018	BRD004	BRD004	BRD004	BR1014	8RD004	BRD004	70000	10000	94000kg	BR 1014	BRD005	BRU018	BR 0005	BRK007	BRD005	8RD005	8RD005	8RD005	880005	BRK007	BRK007	BR0005	RREGON
Results 1.57 1.66 1.73 1.73 1.73 1.73 1.75 1.7	Units	0/00	0/00	0/00	0/07	0/07		3/80	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	2,01) (0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/60	0/00	6/60	0/00	0/60	0/00
Chromium Cobper Olbromochloropropane Disopropylmethyl Phosphonate Dithiane Dithiane Dithiane Dithiane Dithiane Dithiane Dithiane Dithiane Dithiane Dithiane Dithiane Dithiane Dithiane Dithiane Dithiane Dithiane Dithiane Corper Aldrin Arsenic Atrazine Cadmium Hexachlorocyclopentadiene Chlorophenylmethyl Sulfide D-Chlorophenylmethyl Sulfide D-Chlorophenylmethyl Sulfide Copper Copp	Results	1.57+01	1.06+01	*			;	٦.	4.	۵.	'n.		ĸ,	7.	'n,		.	'n	σ	: ,	ċ	5,45+01	ĸ,		₽,	9.9	ė	Ŕ	ó	ń	'n			ĸ,	1 1 100
	Analytical Parameters	Chromium	Copper	Dibromoch loropropane	Dievelopentadiene			Diisopropylmethyl Phosphonate	Dithiane	Dieldrin	Endrin	Mercury	Isodrin	Melethion	1.4-Oxathiane	(ead	Dichlorodiphenylethane	Dichlorodiphenyltrichloro-			Z-Chioro-112.4-Dichiorophenyij Vinyidiethyi Phosphates	Zinc	Aldrin	Arsenic	Atrazine	Codmitum	Hexachlorocyclopentadiene	Chlordane				Chromium	copper	Pitteromoch Loropropane	
	Depth (ft)	4.9-5.8																					5.2-6.1												

1036MKE221

Results for some parameters may appear in more than one analytical fraction. Note:

Ebasic Servi	Ebasco Services Incorporated	ated	Rocky Mountain Arsenal Program	Program		01/27/88
Summery of Analytical	inalytical Re	Results	Tosk 10 (hemic	(hemical Sewers No	North Plants	
Borina	Depth (ft)	Sample	Analytical Parameters	Results	Units	Semple Number
1036MKE221	5.2-6.1	5011	Vapona Diisopropylmethyl Phosphonate Dithiane Dieldrin Endrin Mercury Isodrin Malethion 1.4-fixathiane	LT 3. +00 LT 401 LT 501 LT 5. 00-02 LT 701 LT 301 LT 301	+000	BRD005 BRD005 BRD005 BRD005 BRJ013 BRJ005 BRL005 BRD005
			Dichlorodiphenylethane Dichlorodiphenyltrichloro- ethane Parathion 2-Chloro-I(2,4-frichlorophenyl) Vinyldiethyl Phosphafes	LT 19 9.	-01 ug/g -01 ug/g -01 ug/g -01 ug/g	BRD005 BRD005 BRD005 BRD005
1036MKE222	5, 3-6, 0	5011	Aldrin Arsenic Atrazine Cadmium Hexachlorocyclopentadiene Chlorophenylmethyl Sulfide p-Chlorophenylmethyl Sulfone Chroslum	11 1 11 11 11 11 11 11 11 11 11 11 11 1	-01	88V006 88V019 88V018 88V006 88V0006 88V0006 88K0006
			Copper Dibromochloropropane Oleyclopentadiene Varona Diisoplopylmethyl Phosphonate	LT 7.9.9	+00 00/0 -01 00/0 +00 00/0 +00 00/0 +00 00/0	877 008 870006 870006 870006 870006

Summary of Analytical Results

Results for some parameters may appear in more than one analytical fraction. Note:

Chemical Sewers -- North Plants

Rocky Mountain Arsenal Program

185k 10

Summery of Analytical Results Ebasco Services Incorporated

1036MKE223

Boring Number

BRDOO7 BRDOO7 BRROO9 BRDOO7

00000

7. -01 3. -01 1.3 +01 6. -01 5. -01

Sample Number

BRD007 BRD007

0/00

-01 -01

. .

BRK009

0/00

4.4 +01

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¢

éd X	Analytical Parameters	LE .	Results	Units	Sample Number
81.80k	Thiodialycol	-	2,554111	0/00	886011
Blank	Thiodiglycol	-	2.55+00		881006
Blank	Menouny		8.60-02		805001
Blank	Arsenic		3.43+00		BoT001
Blonk	Cadmium	ב	6.6 -01	0/60	800001
B.I.ank	Chromium	1	5.2 +00	0/00	Baudai
Blank	Copper	-	4.9 +00	0/00	BOUDUI
Blank	L-ad	-	1.3 +01		800001
8.1 erik	Zinc	۲	9.5 +00		89,1001
R) ank	Ditromochloropropane	L	5.00-03	0/00	800001
Blank	Aldrin	-	301	0/00	BOWOO1
Blank	Atrazine	1	301	0/00	BOWOOI
Blank	Chlordane	1	2. +00	0/00	BOM001
R Jerk	Hexachlorocyclopentadiene		601	0/0n	B0W001
Blank	p-Chlorophenylmethyl Sulfide	-1	901	0/00	BOW001
Blank	p-Chlorophenylmethyl Sulfoxide	-	301	0/60	BOWOO1
Blenk	p-Chlorophenylmethyl Sulfone	ר	301	0/00	BOW001
Blank	Dibromochloropropane	ב		0/00	BOW001
Blank	Dicyclopentadiene	ר'	1. +00	0/00	BOWOOI
Blank	Vapona	ב	3. +00	0/00	BOWOOI
Blank	Diisopropylmethyl Phosphonate	11	1. +00	0/00	ROMOO1
81.51.1	Pithiane	1.1	401	6/6n	BOM001
81ank	Dieldrin	-1	301	B/80	BOWOO1
Blank	Endrin	-1		0/00	BOW001
Blank	Isodrin	_	301	0/00	BOMOO1
RIGHT	Majati ::	1.1	701	0/00	BOWOOI
Blank	1,4-Oxelhiane	<u>-</u>	301	0/00	Romoo1
Rlank	Dichlorodiphenylethane	٢,	601	0/00	BOMODI
Blank	Dishlorodiphenyltrichloro-	-	501	0/00	BOMO01
	ethane				
Blank	Parathion	_	901	0/60	Bow001
Blank		_	601	6/60	BOW001
Blant	Vinyldiethyl Phosphates I.4-Oxathiane	-1	301	6/60	BOXO01

Note: Blanks are matched to analytical lots by the first three characters in the Sample Number.

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LAMB Billion

Sample Number BOXOO1 BOXOO1 BOXOO1 BOXOO1 80Y001 80Y001 BOXDO BOYOU BOYOUL BOYOUL 80X001 Boxoo Baxoo BOXOO Baxon BOX001 BOXCO BOX001 BOXOD Baxoo Boxoot BOXDD1 80×001 BOXOO 89x001 BUYOU **BQY001** 00/0 0/00 0/0/00 0/00 0/07 0/00 0/00 0/00 0/00 0/00 0/0n 0/00 0/01 0/00 0/00 0/011 0/00 0/00 0/00 o/on o/eri 10-000 +0-10-80 100 q 00+ 9 99 -01 0-10-6 0-0--01 -01 -0 -01 -C ö Results 9 0 Chemical Sewers -- South Flants Blanks Associated with Task 10 - -_ 2-Chloro-1(2,4-D1chlorophenyl) p-chlorophenylmethyl Sulfide p-Chlorophenylmethyl Sulfoxide p Chlorophenylmethyl Sulfon-Dibromochloropropane p-Chlorophenylmethyl Sulfoxide Dilsopropylmethyl Phosphonate p-Chlorophenyimethyl Sulfide p-Chlorophenylmethyl Sulfone Dichlorodiphenyltrichloro-Hexach lorocyclopentadiene Hexachlorocyclopentadiene Vinyldiethyl Phosphates Analytical Parameters Dichlorodiphenylethane Oibromochloroprobane Dicyclopentadiene Malathion Parathion Chlordane Chlordane Atrazine Dieldrin Atrazine Oithiane Isodrin athone. Aldrin Endrin Aldrin of Analytical Requite Blank Blank Blank 81enk Blank 81 ank 81enk 81enk 81 ank Blank B.J. Berok Blank Blank Blenk 81enk Blank Blenk 81 ank 81 arrik Blank 8 Jenk Blank B) ank 81 ank Blank Blank ...

Blanks are matched to analytical lots by the first three characters in the Sample Number Note:

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80Y001 80Y001 80Y001

0/00

200

Diisopropylmethyl Phosphonate Dithiana

Blank Blank Blank

Blank

Riarit

Richk

Dicyclopentadiene

0/00

0/60

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-01 0. T | |

Summery of Analytical Results Flusion Services Incorporated

5	ants
1 2 SK	South Plants
with	
	ί
int	STORES
15500	ç
K 9	100
Blanks Associated	Chemical

			9.759.00)		
		i				
Blank.	Oleidrin	1	'n.	-01	0/00	BOYDO1
8 Jenk	Endrin	٢٦	'n.	-01	0/00	80Y001
Blank	Isodrin	<u>-</u>	'n.	-01	0/60	BOYOU
Blank	Melethion	ר	Ŋ,	-01	0/00	BOY001
Blank	1.4-Oxathiene	7	ģ	00+	0/00	B0Y001
Blank	Dichlorodiphenylethane	_	r,	-01	6/60	80Y001
81ank	Dichlorodiphenyltrichloro-	-1	ė	-01	6/60	BOYOO1
	ethane					
81enk	Parathion	11	4	-01	0/00	BOYDO1
Blank	2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates	LT	m;	-01	6/60	80Y001
81ank	Mercury		80	8.30-02	0/00	BRAD01
Blank	Cadmium		7.3	7.36-01	0/00	BRB001
Blank	Chromium		1.3	1.77+01	0/00	BRB001
Rienk	Copper		8.4	8.44+00	0/00	BRB001
81enk	read		-	1.31+01	0/00	888001
Blank	Zinc		4.4	4.40+01	a/an	BRBOO1
Blank	1,4-Oxathiane	L1	ņ	-01	0/00	BRC001
B I ank	Aldrin	-1	κ,	-01	0/00	BRC001
B) ank	Atrazine	ב	•7	٠٥	0/00	BRC001
Blank	Chlordane	-1	κ,	00+	0/00	BRC001
Blank	Hexachlorocyclopentadiene	:	Ġ	٥-	0/00	BRC 001
Blank.	p-ChlorophenyImethyl Sulfide	5	o.	-01	0/00	BRC001
Blank	p-Chloropheny)methyl Sulfoxide	۲	₩,	-01	o/or	BRCOD1
81ank	p-Chlorophenylmethyl Sulfone	-1	'n	-01	0/00	BRC001
Blank	Dibromochlaropropane	_	'n	-01	0/00	BRC001
Rlank	Dicyclopentadiene	_	-	00+	0/00	BR C001
81 ank	Varorio	11	'n	00+	6/6n	BRC001
Blank	Diisopropylmethyl Phosphonate	-	-;	00+	0/00	BRC001
Rienk	Entthisane	_	٠,	i)-	0/60	BRC001
Blank	Dieldrin	-1	'n	<u>-</u>	0/00	BRCODI
Blank	Endrin		'n	<u>-</u> 0	0/00	BRC 001
721	7		•		•	1000

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Ebasco Services Incorporated

Porty Mountain Arsenal Program

Summary of Analytical Results Bia

Blanks Associated with Task 10 Chemical Sevens -- South Plants

Type	Analytical Parameters	Ľ	Results	ار د د	Units	Semple
		į			-	
Blank	Melathion	1	,	Ģ	0/07	RRCOOT
Blank	Dichlorodiphenylethane		ć	; ;	0/00	SP COCK
81erk	Dichlorodiphenyltrichloro	Ļ	Š.	-01	0/00	BRC001
1				i	•	
DIGITA	Perethion	-1	o,	ō	0/0n	SRC001
61.07K	2-Chloro-1(2,4-Dichlorophenyi) Vinyldiethyi Phosphates	_ _	ė	-01	0/00	BR C001
Blank	Aldrin	1	P)	10-	0/00	RRDOOT
B.J.e.r.k	Atrazine	_	, p)	ļ	0/07	BROOM
81enk	Chlordane	ב	~	9	0/00	SRD001
81ank	Hexachlorocyclopentadiene	ב	ø	-0	0/00	BRDOOT
Blank	p-Chlorophenylmethyl Sulfide	-	o,	-01	0/00	BRDOOI
Blank	p-Chlorophenylmethyl Sulfoxide	-	6	-01	0/00	BRDOO1
Blank	p-Chlorophenylmethyl Sulfone	ב	₩,	-01	0/00	BRDOOI
Blank	Dibromochloropropane	۲	'n	-01	0/00	BRDOOL
Blank	Dicyclopentadiene	נ	Ή.	00+	0/00	BR0001
Blant	Vapona	L.T	ĸ,	00+	0/00	BRD001
Blank	Diisopropylmethy] Phosphonate	L	-	00+	0/07	RRDOOT
B.J.Brit	Dithiane	_	4	-01	0/0/	BRDOOT
R1 ank	Oteldrin	11	P)	10-	0/00	BRDDD1
81ank	Endrin	ב	δ.	-01	0/00	BROODI
8 Jank	Isodrin	_	₽.	-01	6/60	BRDOOL
Blank	Melathion	-1	,	-01	מס/ס	BRDDOOT
81erik	1,4-0xathiane	ב	M	-01	00/00	BROOM
81ank	Dichlorodiphenylethane	-1	ý.	-01	0/00	BROOD
8) ank	Dichlorogiphenyltrichloro-	1	Ψ.	-01	6/60	BRDD01
	ethane					
81ank	Parathion	_	o.	-01	6/6 0	RRD001
Blank	2-Chloro-1(2,4-Dichlorophenyl)	LT	.	-01	0/00	BRD001
700	Dibromochloropponene	-	4	, C C C	-/	
Right	Argentic Cr. Openio	- h-	, ,	5.00-03	0 0	וווחסאבים מ
Blank		, <u>-</u>	^	7.36-01	0/00	SP 1001
Blank	Chromium	l		1.01+01	0/00	BR 1001

Note: Blanks are matched to analytical lots by the first three characters in the Sample Number.

Summery of Analytical Results

•				
Type	Analytical Parameters	Results	Units	NUMBER
		-		
Blank	Copper	1.07+01	0/00	BR1001
Blank	Lead	1.15+01	0/00	BR1001
Blank	Zinc	3,56+01	0/0n	BR 1001
Blank	Mercury	1.10-01	o/on	BR3001
Blank	Chromium	LT 5.2 +00	6/6 0	BRK001
Blank	Copper	LT 4.9 +00	0/00	BRK001
Blank	Lead	LT 1.3 +01	9/80	BRKOO1
Blenk	Zinc	LT 9.5 +00	0/00	BRK 001
Blank	Mercury	1.26-01	0/00	BRLOOI
Blank	Arsenic	2.70+00	0/6n	BRU001
Blank	Bloyelpheptadiene	LT 401	0/00	800001
Blank	Carbon fetrachloride		0/00	BUV001
Blank	Chlorobenzene		0/00	BUVUO1
Blank	Benzene	LT 301	0/6m	800001
Blank	Dibromochioropropane	LT 2. +00	0/00	800001
Bienk	Dicyclopentadiene	17 701	o/on	BUV001
Blank	Dimethyldisulfide	17 2. +01	0/00	BUV001
Blank	Ethylbenzene		0/60	BUV001
Blank	Toluene	LT 301	0/6n	BUV001
Blank	Methyllsobutyl Ketone	LT 701	0/60	811001
Blank	Ortho- & Fara-Xylene	LT 5. +00	0/00	BUV001
Blank	1,1-Dichloroethane	LT 2. +00	0/00	BUV001
B) ank	1,1,1-Trichloroethane		0/00	BUVDO1
Blank	1,1,2-Trichloroethane	LT 401	o/on	BUVOOT
Blank	1,2-Dichloroethene	LT 2. +00	0/00	80001
8 lank	1,2-Dichloroethene	LT 601	0/00	BUV001
Blank	a-Xylene	LT 801	0/00	8(1/001
Blank	Chloroform	1.3 +00	0/60	BUV001
Rlank	Methylene Chloride		0/00	BIJVOO1
Blank	Tetrachloroethene	3.7 -01	0/00	BUV001
Blank	Trichloroethene	2.5 +00	0/60	BUVOOI
Blank	Tetrachloroethene	3.7 -n1	0/00	RUV001
Rlank	Methylene Chloride	•	0/011	800001
Blank	Chleroform	130+ 50 1	5/611	RUV001

Note: Blanks are matched to analytical lots by the first three characters in the Sample Number.

ė GA	Andlytical Parameters	Ľ	6177662	n.	,	
81enk	p-Chlorophenylmethyl Sulfide	5	ڼ	00+	0/00	BUW001
81ank	Aldrin	1	r)	-01	00/00	BUMOO1
Blank	Atrazine	۲	€,	-01	0/00	BUMODI
Blenk.	Chlordane	-1	ė	-01	0/00	BUMOO1
Blank	Hexachlorocyclobentadiene	ב	₩.	-01	0/00	RUMOO1
Blank	p-Chlorophenylmethyl Sulfoxide	ב	۲,	00+	6/6n	BUW001
81enk	p-Chlorophenylmethyl Sulfone	ר -	ý	-01	0/60	BUW001
Rlank	Dibromochloropropane	-	, ,	-01	0/00	BUMUDI
Blank	Dicyclopentadiene	ב	4	-01	0/00	BUMOO1
Blank	Vapona	-	ĸ;	-01	0/00	BUMOOI
81enk	Offsopropylmethy! Phosphonate	1	÷,	-01	6/6n	BUMO01
B! ank	Dithiane	-1	۲.	00+	0/00	BIJW001
Rient	Dieldrin	1	5	ō	0/00	BUMOCI
Blank	Endrin	ב	₩,	-01	0/00	BUMDO1
Blank	Isodrin	<u>'</u>	'n	-01	0/00	BUMDO1
Blank	Melethion	ר	ĸ,	<u>-</u> 0	0/00	BUW001
Blank	1.4-Oxathlene	-	ė	00+	e/en	BUM001
Blank	Dichlorodiphenylethane	ב	r,	-01	0/00	RUM001
81ank	Dichlorodiphenyltrichloro-	ר	.	-01	0/00	BUW001
	ethane					
Blenk	Parathion	_	4.	-01	0/00	BUM001
81enk	2-Chloro-1(2.4-Dichlorophenyl) Vinyldiethyl Phosphates	11	r,	-01	0/6n	BUW001
81enk	Aldrin	1	m	-01	0/60	8UX001
Blank	Atrozine	-	8	-01	0/00	BUX001
Blarik	Chlordane	-	6	00+	0/00	BUX001
Blenk	Hexachlorocyclopentadiene	L 7	9	-0	0/00	BUXD01
Blank	p-Chlorophenylmethyl Sulfide	ב	ć.	-01	0/00	8UXO01
81enk	p-Chloropheny imethy 1 Sulfoxide	_	ĸ,	-01	0/00	BUXOD1
Blenk	p-Chlerophenylmethyl Sulfone	_	m	-01	0/00	8UX001
R Jank	Dibromochloropropage	<u> </u>	ø,	ņ	5/60	BUXOG1
Blant	Picyclopentadiene	_	-	90+	0/00	BUXODI

		1				
Blank	Dilsopropylmethyl Phosphonate	1	-	00+	0/0/	BUXOOT
Riank		_	9	ç	0/01	BUXOO
7.0	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	- _	,		0/07	TOO AT TO
100	· · · · · · · · · · · · · · · · · · ·	- 1		5 5	0 / 0	RIVOOT
Blank	Isodrin	-	m	-	0/00	BUXDD1
			•	1	•	
Blank	Malathion	L	۲,	-01	0/00	BUXOGI
Blank	1,4-0xathiene	ב	'n	-01	0/00	RUXOOI
Blank	Dichlorodiphenylethene	L	Ġ	-01	0/00	BUXOO1
81 ank	Dichlorodiphenyltrichloro-	-	Š.	-01	0/00	BUXDD1
	ethane					
81ank	Farathion	1	oʻ	-01	0/0 0	BUX001
B1enk	2-Chloro-1(2,4-Dichlorophenyl)	1	ė	-01	0/00	BUXOO1
	Vinyldiethyl Phosphates					
Blank	Arsento	-	5.0	5.0 +00	8/8n	BVC001
81enk	Mercury		6	9.30-02	0/00	BVD001
81ank	Chromium			1.31+01	0/00	BV3001
Riank	Copper		S.	5.52+00	6/6 0	BV 3001
Blank	Lead		1.6	1.61+01	0/00	BV J001
Blank	7inc		3.6	3.67+01	o/on	803001
Blank	Codmicm	ב	7.3	7.36-01	0/00	87,3001
Blenk	Arsento		2.6	2.65+00	no/a	BVK001
81enk	Mercury		9.6	9.60-02	a/an	BVL001
Blank	Aldrin	-	₽,	-01	0/8n	BVM001
Blank	Atrazine	-	'n	ō-	0/0n	BVM001
Blank	Chlordane	٦	۸	00+	0/0n	BVMD01
Blank	Hexach lonocyclopentadiene	=	ė	<u>-</u> 0	0/0n	BVM001
Blank	p-Chlorophenylmethyl Sulfide	-1	o.	-01	6/6n	BVM001
Blank	p-Chlorophenyimethyl Sulfoxide	7	, ,	-01	0/0n	BVMO01
Blank	p-Chlorophenylmethyl Sulfone	-	ĸ,	<u>-</u> 1	6/8n	BVM001
Blank	Dibromochloropropane	_	ń	-01	0/011	BVMOD1
Blank	Dicyclopentadiene		.	00+	6/6n	RVMOOI
Blank	Væponæ	5	<u>ب</u>	00+	0/0n	BVMOO1
Rlank	Ofisoprobylmethyl Phosphonate	1.1		70+	0/00	BVMOD1

Note: Blanks are matched to analytical lots by the tirst three characters in the Sample Number.

Summery of Analytical Results

Blanks Associated with Task 10 Chemical Sewers -- South Plants

Blenk	Die) drin	5	ъ.	-01	0/00	8VM001
Blank	Endrin	17	ě,	-01	0/00	BVM001
81 a nk	Isodrin	L1	'n	-01	0/60	BVM001
81enk	Melathion	1	7.	-01	0/00	BVM001
Blank	1,4-0xathiane	-	ņ	-01	0/00	BVM001
Blenk	Dichlorodiphenylethane	-1	è.	-01	0/00	8VM001
Blank	Dichlorodiphenyltrichloro-	-1	٠,	-01	0/00	BVH001
81ank	Parathion	7	oʻ	-01	0/00	BVMD01
Blank	2-Chloro-1(2,4-Dichlorophenyl) V. yldiethyl Phosphates	LT	ė	-01	0/6 n	BVM001
Rlank	Bicycloheptadiene	-1	,	-01	0/00	BV0001
Rlank.	Carbon Tetrachloride	-1	'n	-01	0/00	800001
Blank	Chloroform	-	₽,	-01	0/00	800001
Blank	Chlorobenzene	1	.	9	0/00	800001
Blank	Benzene	-	ń	-01	0/00	800001
Blank	D1bromoch10ropropane	٦	ζ.	00+	0/00	BVOODI
B) ank	Dicyclopentadiene	ב	7.	-01	0/60	BVOOD1
Blank	Dimethyldisulfide	ר	6	Ę	0/00	BVCOD1
81ank	Ethylbenzene	-	4	- - 0	0/20	80001
8) ank	Toluene	ב	ņ	ō-	0/00	800001
Blank	Methylisobutyl Ketone	-1	۲.	ō	0/00	BV0001
Blank.	Intrachloroethene	ב	€.	-01 -01	6/60	800001
Blank	Frichloroethene		Š.	ē	0/60	BV0001
81enk	1,1-Dichloroethane	-	ć	Ģ	0/00	BV0001
81enk	1.1.1-Trichloroethane	<u>.</u>	4	-01	0/00	B V0001
Blank	1,1,2-Trichloroethane	ב	4	-01	B/80	BV0001
B I ank	1.2-Dichloroethene	Ļ	5	00+	0/00	BV0001
B) ank	1.2-Dichloroethane	_	÷	-01	0/00	BV0001
Blank	B-Xvlen	11	œ.	-01	6/60	BV0001
81 ank	Methylene Chloride		3.5	00+	0/00	BVOOD1
81 ank	Ortho- & Pera-Xylene	_	ķ	-01	6 /60	800001
Blenk	Methylene Chloride		3.5	00+	0/00	BVODD1

Note: Blanks are matched to analytical lots by the first three characters in the Sample Number.

Summary of Analytical Results Finsco Services Incorporated

Rianks Associated with Task 10 Chemical Sewers -- South Plants

, A.S.		•	e i frie au	0		
81 9 nk	Aldrin	ت	ri.	-01	0/60	BVP001
Blank	Atraxine	-	ĸ,	-01	0/00	8VP001
81 ank	Chlordane	L	ø	<u>.</u>	0/00	8VP001
R Lank	Hexachlorocyclopentadiene	-	'n	-01	0/00	BVP001
51enk	p-Chlorophenylmethyl Sulfide	-1	4	00+	B/BN	BVP001
Blenk	p-Chlorophenylmethyl Sulfoxide	ב	۲.	00+	0/00	BVP001
81ank	p-Chlorophenylmethyl Sulfone	-1	ė	-01	0/00	8VP001
Blank	Dibromochloropropane	ב	'n	-01	0/00	BVP001
81ank	Dicyclopentadiene	ר	4	-01	0/00	BVP001
Blank	Vapone	-1	'n	-01	0/00	BVP001
Blank	Diisopropylmethyl Phosphonate	ר	ń	-01	0/00	8VP001
Blank	Dithiane	-	۲.	00+	0/00	BVP001
81enk	Dieldrin	-1	ń	- 0-	0/00	8VP001
Blenk	Endrin	-	'n	-01	0/00	8VP001
B1 enk	Isodrin	-1	₩,	<u>-</u> 0	0/60	8VP001
Blank	Malathion	-	ri	-01	0/00	BVP001
8 ank	Dichlorodiphenylethane	-	'n	-01	0/00	BVP001
Blank	Dichlorodiphenyltrichloro-	۲	Ġ	-01	0/00	8VP001
	ethane					
Blank	Perathion	_	4	-0 1	0/00	BVP001
Blank	2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates		'n	-01	0/00	6 VP001
Blank	Chlorogcetic Acid	1	2	3,55+01	ø/øn	BVQ001
Rlank	Thindiglycol	1	4	4.20+00	0/00	BVOOD
Blank	Chromium		1.	1.29+01	0/00	80001
Blank	Copper		æ	8.68+00	0/00	BVVD01
Blank	Lead		٦.٠	1.02+01	0/00	60001
Blank	Zinc		· ·	3.57+01	0/00	BVV001
Blank	Codmition	1,1	٧.	7, 36-01	0/00	RVV001
Blank	Cadmium	٦	7	7, 36-01	0/00	RVV001
31 ank	Biryrloheptadiene	-	4	-01	0/00	BVWDD1
Rlank	Carbon letrachloride	_	j.	Ē	6/60	RVW001
7:20	•					

Note: Blanks are matched to analytical lots by the first three characters in the Sample Number.

Property Comments

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	Analytical Parameters	ĕ	Results	s i	Units	Number
-	Methylene Chloride	ב	%	00+	0/00	BVWDO1
Ī	Chlorobenzene	-1	1.	00+	0/00	BVW001
_	Benzene	L	r.	-01	0/00	BVW001
_	Dibromochloropropane	-	ς.	00	0/00	BVW001
_	Dicyclopentadiene	۲1	۲.	-01	0/00	BVW001
_	Dimethyldisulfide	Ļ	ζ.	+01	0/00	BVW001
_	Ethylbenzene	_	4	-01	0/00	8VW001
•	Toluene	۲,	₽;	-01	0/60	BVW001
_	Methylisobutyl Ketone	۲	۲.	-01	0/00	8VW001
	Tetrachloroethene	-1	ĸ.	-01	6/6n	BVW001
•	Trichloroethene	ļ.	٠.	10-	0/60	8VW001
Ŭ	Ortho- & Para-Xylene	-	<u>ئ</u>	00+	0/00	BVW001
•	1.1-Dichloroethane	-1	۶.	00+	0/00	RVW001
	1.1.1-Trichloroethane	<u>۱</u>	. 4	-01	a/on	BVW001
•	1,1,2-Trichloroethane	1	.	-01	0/00	BVW001
	1,2-Dichloroethene	L.1	۶.	6	0/00	BVW001
•	1.2-Dichloroethane	7	٠,	-01	0/00	BVW001
•	a-Xylene	-	8	-01	0/00	BVW001
•	Aldrin	ב	٠,	-01	0/00	BVZ001
•	Atrozine	ב	r,	-01	0/00	B VZ001
_	Chlordane	ב	5	Q +	0/00	872001
	Dieldrin	Ľ	۳,	-01	0/60	BV2001
_	Endrin	_	۶.	-0	0/00	B V Z 001
	Isodrin	_	'n.	-01	0/00	BV2001
-	Malathion	۲	۲.	-01	0/00	8v2001
	1,4-Oxathiane	٦	₩.	-01	0/00	8V2001
_	Dishlorodiphenylethane	-1	ė	-01	0/00	BVZ001
_	Dichlorodipheny (trichloromethane)			-01	0/00	8v2001
_	Parathion	-1	e.	-01	0/00	8v2001
`	2-(hloro-1(2,4-Dichlorophenyl)	-	.	-01	0/6r.	BV2001
	Vinyldiethyl Phosphates					
_	Hexach lonocyc lopentadiene	-	è.	-01	0/00	BVZ001
_	p-Chlorophenylmethyl Sulfide	-	ċ.	Ξ	6/6n	BV2001

Summary of Analytical Regults

Blanks Associated with lask 10 (hemical Severs -- South Plants

2.14						
		ļ		-		
Blank	p-Chlorophenylmethyl Sulfoxide	-1	ь.	ų-	0/80	8VZ001
Blank	p-Chlorophenylmethyl Sulfone		'n	-0.1	0/00	BVZ001
Blank	Dibromochloropropane ,	ב	'n.	-01	6/60	BV2001
Blank	Dicyclopentadiene	11		00+	0/00	BV2001
Riank	Vapona	-	8	90+	0/00	8VZ001
Blank	Diisopropylmethyl Phosphonate	ב		00+	0/00	BVZ001
81 ank	Ofthiane	1 1	4	-01	8/6n	BV 2001
R.J.ank	Aldrin	ב	ņ	-01	0/00	BWA001
Rlank	Atrazine	ב	ņ	-01	0/00	BWA001
81ank	Chlordane	ב	ς.	00+	0/00	BWACCI
81ank	Hexachlorocyclopentadiene	-	•	-01	0/00	BWA001
81enk	p-Chlorophenyimethyl Sulfide	-1	o.	<u>-</u> 0	0/00	BWADD1
Blank	p-Chlorophenylmethyl Sulfoxide	<u>-</u>	'n	iọ	0/00	BWA001
Blank	p-Chlorophenylmethyl Sulfone	٦	'n	-01	0/0n	BWA001
P.1 ank	idbromochloropropene	-		-01	0/00	8WACD1
Blank	Dicyclopentadiene	-	-:	00+	0/00	BWA001
Blank	Vapona	ני	%	00+	0/00	BWADO
Blank	Diisopropylmethyl Phosphonate	ב	-	8	0 /00	BWA001
61ank	Dithiane	ב	4	-01	0/00	BWA001
Blank	Dieldrin	_	ĸ	-01	0/00	BWACO 1
Blank	Endrin	-1	5.	-01	0/00	BWA001
Blank	Isodrin	-	ĸ,	<u>-</u> 1	0/00	BWACO1
Rlank	Melathion	1	ζ.	-01	0/00	BWA001
B.1 enk	1.4-Oxathlane		ņ	-01	0/00	BWA001
Blank	Uichlorodiphenylethane	1	Ċ	-01	0/00	BWA001
Blank	Dichlorodiphenyltrichloro- ethene	-	ĸ,	-01	0/00	BWAD:
Blank	Parathion	-1	6	-01	0/00	BWADD1
Blank.	2-chiono-1(2,4-Nichlorophenyl) Vinyldiethyl Phosphates	_	ċ	-01	ø/ør	BWA001
81ant	Bicycloheptadiene	-1	₩.	-01	0/00	BWC001
81ank	Carbon Tetrachloride	_	ĸ	-01	0/00	8MC 001
Blant.	Chloroform	17	ĸ,	-01	0/00	BWC001
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Note: Blanks are matched to analytical lots by the first three characters in the Samble Number.

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Summary of Analytical Results

Blanks Associated with Task 10 Chemical Seurns - South Plants

D C A A	Andiversal renemberers		e i Trie bu	را 1	OUICE	LUGERIN
Blank	Chlorobenzene	15	, n	-01	0/00	BWC001
Blank	Benzene	1	₩,	-o	0/00	BWC001
81 ank	Olbromochloropropane	רו	4	-01	0/00	BWC001
Blank	Dicyclopentadiene	LT	'n	-01	0/00	BWC001
81enk	Ethylbenzene	רז	'n	-01	0/00	BWC 001
8) ank	Toluene	רז	٠;	-01	0/00	BWC001
Blank	Methylisobutyl Ketone	-1	₽,	-01	0/00	BWC001
R.J. Brok	Tetrachloroethene	1	₽,	-03	0/00	BWC001
Blank	Trichloroethene	1	'n	-01	0/00	BWC001
Blank	Ortho- & Pera-Xylene	1	5	-01	0/00	BWC001
Blank	1,1.1-Trichloroethane	LT	٠ <u>.</u>	-01	0/00	BWC001
81 ank	1,1,2-Trichloroethane	ב	₽,	-01	0/00	BWCOU
Blank	1,2-Dichloroethene	1	,	-01	0/00	8WC001
Rlank	1,2-Dichloroethane	L.T	'n	-01	0/00	BWC.001
Rlank	B:XXIene	LI	۲.	-01	0/00	BWC 001
Riank	Ulmethyldisulfide	17	6 0	-01	0/00	BWC001
Blank	1,1-Dichloroethane	11	ø.	-01	0/00	BWC001
Blank	Bicycloheptadiene	1.1	4	-01	0/00	BW 0001
81 ank	Carbon Tetrachloride	LI		-01	0/00	BWD001
Riant	Chloroform	11	'n	<u>-</u>	0/00	BW0001
B i ent	Methylene Chloride			+00	0/00	BWD001
Blank	Chlorobenzene	<u>-</u>	-	00+	B/Bn	RWD001
Blank	Benzene	-	<u>ب</u>	-01	0/00	BUDDO
Blank	Dibromochloropropane	1.1	8	00+	0/00	BWD001
Blank	Dicyclopentadiene	11	۲.	-01	0/00	BWC001
Blank	Dimethyldisulfide	1.1		÷	6/60	BWD001
Blank	Ethylbenzene	1.1	ή.	-01	0/00	8MD001
Blent	Toluene		₩)	-01	0/00	BWD001
Blank	Methylisobutyl Ketone	-	۲.	-01	0/00	BWD001
Blank	Tetrachloroethene	1 1	ж.	-01	0/00	BWDOOD
81erk	Trichloroethene	ר	Ŋ,	-01	0/0n	RWD001
Blank	Ortho- & Fara-Xylene	_	'n	00+	0/00	BUDOO

Note: Blanks are matched to analytical lots by the first there characters in the Sample Number.

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Fhases Services Incorporated Summery of Analytical Results

Blanks Associated with Task 10 Chemical Severs -- South Plants

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	· · · · · · · · · · · · · · · · · · ·	!			1	
Blank	1,1.1-Trichloroethane	ן.	4	-01	0/00	BW0001
fil ank	1.1.2-Trichloroethane	7	4	-01	0/00	8WD001
Blenk	1,2-Dichloroethene	-	5.	00+	6/60	BWD001
8 Jank	S-Xylere	1.1	œ.	-01	0/00	BWD001
81ank	1,2-Dichloroethane	ב	ė	ō	0/00	BWD001
Blank	Mercury		1.0	1.05-01	0/01-	BWE 001
B.J.ank	Arsenio		2.5	2.55+00	o/on	BWF 001
81enk	Chloroacetic Acid	LT	ເນ ເນ	3.55+01	0/6n	8x0001
81enk	Thiodigiycol	1.1	4.2	4.20+00	0/00	BX0001
Blank	Arsenio		2.9	2.93+00	0/00	8YZ001
Blork	Aldrin	_	'n.	- 0	0/00	820001
81ank	Atrazine	_	δ.	٠	0/00	820001
81enk	Chlordane	1	ó	-01	0/00	820001
Blenk	Hexachlorocyclopentadiene	ר'	'n	-01	0/00	820001
Rienk	p-Chlorophenylmethyl Sulfide	ב	, 4	00	00/00	820001
Blank	p-Chlorophenylmethyl Sulfoxide	-1	۲.	00+	0/00	B20001
Blank	p-Chlorophenylmethyl Sulfone	ב	ó	-01	0/00	B20001
Blenk	Dibromochloropropene	ר	₩.	-01	6/6 0	820001
Blank	Dicyclopentadiene	_	4.	- 10-	6/60	8ZD001
Blank	Vapona	1.1	<u>ج</u>	-01	0/00	BZD001
8 ank	Dilsopropylmethyl Phosphonate	-1	٠,	-01	a/an	820001
Blank	Dithiane	_	۲.	00+	0/00	82D001
Blank	Dieldrin	ב	r)	-01	6/60	820001
Blank	Endrin	ב	•	-01	6/60	820001
Blank	Isodrin	[]	₽,	-01	0/00	820001
B) ank	Malathion	7	٠, س	-01	0/00	820001
Blank	1,4-Oxathiane	-1	9	OQ.	0/00	B25001
8) ank	Dichlorodiphenylethane	-	ĸ.	-01	0/00	100028
Blank	Dichlorodishenyltrichloro- ethane	ר	Ġ	-01	0/00	BZD001
Blank	Parathion	_	7	-01	0/00	820001
81ank	2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosobates	-	₽.	-01	e/en	82D001
R. S.					-/	

Summary of Analytical Results

Blanks Associated with Task 10 (hemical Sewers -- South Plants

		•	STITEDY		
Blank	Copper	İ	8.28+00	0/00	8ZE001
B.enk	Lead		1.12+01	0/60	82E001
81ank	Zinc		3.98+01	0/00	BZEOO1
Blenk	Codmicm	-	7, 36-01	0/60	BZEOU1
Blank	Mercury		5.90-02	0/00	82F001
81ank	Aldrin	-1	2.5 -01	0/00	BZHDO1
RIONE	Atrazine	۱,	2.5 -01	0/00	82H001
Blank	Chlordane	-	1.7 +130	0/00	BZHOU1
Blank	Hexachlorocyclopentadiene	<u>۔</u> نـ	5.7 -01	B/80	BZHOO1
81ank	p-Chlorophenylmethyl Sulfide	<u>,</u>	9.1 -01	0/00	BZH001
Blank	p-Chlorophenylmethyl Sulfoxide	ב	2.5 -01	0/60	82H001
Blank	p-Chlorophenylmethyl Sulfone	_	2.5 -01	6/60	BZHOU1
B) ant	Dibromochlerophopane	ר	2.8 -01	0/00	B2H001
Blank	Dicyclopentadiene		1.1 +00	0/00	B2H001
Blank	Dilaopropylmethyl Phosphonate	-1	1.1 +00	0/00	BZHCO1
B) ank	Dithiane	_	3.6 -01	0/00	BZHOO1
Blank	Dieldrin	ב	2.5 -01	0/00	BZH001
81ank	Endrin	1	4.6 -01	6/6n	BZHOO1
Blank	Isodrin	-1	2.9 -01	o/on	82H001
Riank	Maiathion	_	7.1 -01	0/00	B2H001
B) arık	1.4-Oxathiane		2.5 -01	0/00	82H001
Blank	Dichlorodiphenylethane	1	5.7 -01	0/00	BZH001
Blank	Dichlorodiphenyltrichloro-	Ļ	4.7 -01	0/011	82H001
8) enk	Parathion	_			82H001
81ank	2-Chloro-1(2.4-Dichlorophenyl)	-1	6.1 -01	0/60	82H001
81ank	Bicycloheptadiene	-	301	0/00	821001
700	entrantal reduction	-	, .	0/00	R21001
300					871001
		- L			100178
3000	Chlorobanzana	- -			821001
4 15 7		,			

Summary of Analytical Results	Blanks Associated L Chemical Sewers	lith Task 10 South Plants		
Tybe	Analytical Parameters	Results	Units	Sample Number
Blerk Blerk	Chlordane Lichlorodiphenylethane	LT 2.0 +00 LT 6.0 -01	0/00	82L001 82L001
63 enk 63 enk 63 enk 63 enk	Dieldrin Endrin Dichlorodiphenyltrichloro-	L7 3.0 -01 L7 5.0 -01 L7 5.0 -01	6/6n 6/6n	82L001 82L001 82L001
81enk Blenk	ethane Dimethyldisulfide Chlorobenzene	LT 2.0 +01 LT 1.5 +00	0/00	BZM001 BZM001
Blank Blank Blank Blank	Dibromochloropropane Methylisobutyl Ketone Trichloroethene	LT 2.4 +00 LT 7.3 -01 LT 5.4 -01	0/00	82M001 82M001 82M001 82M001
Blenk	Carbon Tetrachloride	2.5	0/00	B2M001
Blenk Blenk Blenk Blenk Glenk	Chloroform Methylene Chloride Benzene Dicyclopentadiene Ethylbenzene	LT 2.9 -01 LT 1.5 +00 LT 2.5 -01 LT 6.4 -01 LT 3.8 -01	0/00	82M001 82M001 82M001 82M001 82M001
Blenk Blenk Blenk Blenk Blenk	Toluene Tetrachloroethene Ortho- & Pana-Xylene 1.1-Dichloroethane 1.1.2-Trichloroethane	LT 2.5 -01 LT 2.5 -01 LT 4.9 +00 LT 1.7 +00 LT 3.9 -01	0/0n 0/0n 0/0n	82M001 82M001 82M001 82M001 82M001
Blank Blank Rlank Blank Blank	1,2-Dichloroethane m-Xylene Bicycloheptadiene 1,2-Dichloroethene Arsenic	LT 5.6 -01 LT 7.4 -01 LT 3.6 -01 LT 1.7 +00 LT 5.0 +00	0/00	82M001 82M001 82M001 82M001 82M001
Blank Rlank Rlank Rlank	Cadmium Chromium Copper Lead Zinc	LT 6.6 -01 LT 5.2 +00 LT 4.9 +00 LT 1.3 +01 LT 9.5 +00	0/00	820001 820001 820001 820001

Type	Analytical Parameters	ü۲	Results	รั	Units	Number
-		ļ		1		
Blank	Mercury		6.50-02		0/00	B2P001
Blank	Chloroacetic Acid	-	3.55+01		0/00	620001
Blank	Thiodialycol	-	4.20+00		0/00	820001
Blank	Bicycloheptadiene	L	3.6 -0.		0/00	82R001
Blank	Carbon Tetrachloride	۲	2.5 -0		na/a	B2R001
Blank	Chloroform	ר	2.9 -0.		0/00	BZR001
Blank	Methylene Chloride	-	1.5 +00		0/00	BZROO1
Blank	Chlorobenzene	-	1.5 +00		0/00	BZR001
Blank Blank	Benzene	۲	2.5 -01		0/00	82R001
81enk	Dibromochloropropane	ב	2.4 +00		0/00	BZR001
Blank	Dicyclopentadiene	11	6.4 -01		0/00	BZR001
Blank.	Ethylbenzene	-	3.8 -01		6/6n	B2R001
Blonk	Toluene	L	2.5 -01		0/00	BZROO1
8) ank	Methylisobutyl Ketone	ב	7.3 -01		o/on	82R001
Block	Tetrachloroethene	٢٦	2.5 -01		0/60	BZR001
Rlank	Trichloroethene	11	5.4 -01		0/00	BZROO1
81enk	Ortho- & Para-Xylene	ב	4.9 +00	-	0/00	82R001
Blank.	1.1-Dichloroethane	ב	1.7 +00		0/01	BZR001
Blank	1,1,1-Trichloroethane	ב	4.3 -01		0/60	B2R001
8 Jank	1,1,2-Trichloroethane	[1	3.9 -01	_	0/60	82R001
8 Lank	1,2-Dichloroethene	-	1.7 +00		0/00	BZR001
Blenk	1,2-Dichloroethene	ב			0/00	BZROO1
Blank	a-Xylere	-	7.4 -01		0/60	82R001
Blank	1,4-0xathlane	ב	6. +00		0/00	BZ S001
81ank	Dicyclopentadiene	ב	401		0/6n	825001
Blank	Diisopropylmethyl Phosphonate	11	301		0/00	825001
Blank	Dithiane	1	7. +00		0/00	825001
Blank	Dibromochloropropane	-1	301		8/80	BZ S001
Blank	Vapona	_			0/60	825001
B.Lank	p-Chlorophenylmethyl Sulfide	=	4. +00		0/00	825001
81 ank	Hexachlorocyclopentadiene	1	301		0/60	825001
Blank	p-Chlorophenylmethyl Sulfoxide	1.1	7. +00		6/or	825001
Blank	p-Chlorophenylmethyl Sulfone	_	601		0/60	875001

Note: Blanks are matched to analytical lots by the first three characters in the Sample Number.

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Type	Analytical Parameters	ř	Results	Þ	Units	Sample Number
81 ank	Melathion	5	301	1	0/00	825001
81ank	Aldrin	-	301		0/00	825001
Blank	Parathion	-			0/00	R25001
B) enk	Isodrin	1	301		0/00	825001
Blank	2-Chloro-1(2,4-Dichlorophenyl) Vinyldiethyl Phosphates	5	301	_	0/60	825001
Blank	Dichlorodiphenylethane	-	301		0/60	825001
Blank	Dieldrin	-	301	-	0/00	825001
Blank	Endrin	1	301		0/00	BZS001
81enk	Dichlorodiphenyltrichloro-	LT	601		0/00	825001
					•	
61enk Blenk	chlorognetic Acid		3.55+01		0/07	825001 82T001
A Lary		-	4.20+00	c	0/01	1001Z
700		. j-	A A		0/0	27.1001
B) ank	Carbon Tetrachloride	- L	2.5		0 0	RZ1001
Blank	Chloroform	; =			0/07	820001
8 ank	Methylene Chloride	רו			0/00	820001
Blank	Chlorobenzene	٢٦	1.5 +00	0	0/00	BZUOO1
Blank	Benzene	ב	2.5 -01		o/on	820001
Blenk	Dibromochloropropane	L	2.4 +00	0	o/on	820001
Blank	Dicyclopentadiene				0/00	820001
81enk	Ethylbenzene	נו	3.8 -01	_	0/00	820001
Blank	Toluene	LT			0/00	820001
Rlenk	Methylisobutyl Ketone	-			0/00	820001
Blank	Tetrachloroethene	-1		_	0/80	RZU001
Blank	Trichloroethene	=	5.4 -01	_	0/00	8ZU001
81enk	Ortho- & Para-Xylene	L	4.9 +00		0/00	820001
Blank	1,1-Dichloroethane	۲	1.7 +00	0	6/60	820001
Blank	1,1,1-Trichloroethane	-1	4.3 -01	1	0/00	820001
Blank	1,1,2.Trichloroethane	17	3.9 -01	_	0/00	820001
Blank	1,2-Dichloroethene	-	1 7 +00		0/4	100112
				<u></u>	0 / 0	0000

Summary of Analytical Results

Blanks Associated with Task 10 Chemical Sewers -- South Plants

Blank	0001-X-15	17	7.6	7.4 -01	0/07	820001
81ank	Chloromeetic Acid	-	5	3.55+01	0/00	BZV001
R.Lenk	Thiodialycol	_	4	4.20+00	0/011	BZVOn1
Blank	Chlorometic Acid	1	5	3.55+01	0/00	8ZMO01
Blank	Thiodigiycol	-1	4.2	4.20+00	0/60	82W001
Blank	Mercury	ב	5.0	5.00-02	0/80	82X001
Blenk	Arsento		3.6	3.47+00	0/00	BZZ001
81ank	Chromium		1.6	1.61+01	0/00	CAADD1
Blank	Copper		8.6	8.69+00	0/00	CAAOO1
8.1 ank	Lead		1.2	1.24+01	0/60	CAAD01
81enk	2100		. A	4.32+01	0/80	CAADO1
Blank	Codmitim	-	7.3	7.36-01	0/00	CAADD1
Blank	Aldrin	1	'n	-01	0/60	CACOUL
Blank	Atrezine	[]	'n	-01	6/ 6 0	CACOUI
Blank	Chlordane	ב	<u>ن</u>	-01	0/00	CAC001
Blank	Hexach lorocyclopentadiene	۲	r,	, 10,	6/60	CAC001
Blank	b-Chlorophenylmethyl Sulfide	=	4	-	0/011	CACODI
Blank		L L		000	0/00	CACODI
Blenk		ב	6	-07	0/00	CACDOI
Blank		7	'n	-01	6/60	CACD01
81enk	Dioyolopentadiene	L	4.	-01	0/00	CACDO1
Blank	Vapona	_	'n	-01	o/on	CACDOI
Blank	Dissopropylmethyl Phosphonate	_	₩.	-01	6/60	CAC001
Blank	in this me		7	00+	0/60	CACODI
Blenk	Dieldrin	-	'n	-01	0/00	CAC001
81enk	Endrin	1	r;	-01	0/60	CAC001
Blenk	Isodrin	1.1	w)	-01	0/60	CACOUI
Blank	Malathion	-	*2	-u	0/60	CACODI
Blank	1,4-Oxathiane	-1	ċ	00+	0/60	CAC DO1
Rlank	Dishlorodirhenylethane	ב	ń	Ε,	0/00	CAC001
B1 ank	Dichloradiphenyltrichloro-	-	Ġ	-01	0/00	CACDOI
	ethane					
Blank	Parathion	- 1	. 4	-01	0/00	CACODI
Blank	2-Chloro-1(2.4-Dichlorophenyl)	-	~	ć	0/00	100747

Note: Blanks are matched to analytical lots by the first three characters in the Sample Number.

Blank	Summery of Analytical Results	ts Blanks Associated with Task 10 Chemical Severs South Plants	esk 10 Plants		,.
Verbons Atrazine LT 3.0 +00 us/g Chlordere Chlordere LT 2.5 -01 us/g P-Chloropheny imethyl Sulfate LT 2.5 -01 us/g P-Chloropheny imethyl Sulfate LT 2.5 -01 us/g Dibromochloroprosene LT 2.5 -01 us/g Discolopeny imethyl Sulfane LT 2.5 -01 us/g Discolopeny imethyl Phosphonate LT 3.6 -01 us/g Discolopeny imethyl Phosphonate LT 3.6 -01 us/g Distoria LT 3.6 -01 us/g Halsthion LT 2.5 -01 us/g Distoria LT 2.5 -01 us/g Vinture LT 2.5 -01	Type	Analytical Parameters	Results	Unita	Semple Number
Atrazine Chiordene Chiordene Hexachiorophenylmethyl Sulfante D-Chlorophenylmethyl Sulfante D-Chlorophenylmethyl Sulfante D-Chlorophenylmethyl Sulfante D-Chlorophenylmethyl Sulfante D-Chlorophenylmethyl Sulfante D-Chlorophenylmethyl Sulfante Dicyclopentadiene Dicyclopentadiene Dicyclopentadiene Dicyclopentadiene Dicyclopentadiene Dicyclopentadiene Dicyclopentadiene Dicyclopentadiene Dicyclopentadiene Dicyclopentadiene Dicyclopentadiene Dichlorodiphenyltrichloro- Carbon Tetrachloride Dichlorodiphenyltrichloro- Carbon Tetrachloride Dichlorophenyltrichloro- Carbon Tetrachloride Dichlorophenyltrichloro- Chioroform Hethylane Chloride Carbon Tetrachloride Chioroform Hethylane Chloropheny Dicyclopentadiene Chloropenzene Chlorope	Blenk	Verone	3.0	0/00	CADONI
Atrazine Chlordene Heachlorocyclopentatione Chlorophenylmethyl Sulfate D-Chlorophenylmethyl Sulfate D-Chlorophenylmethyl Sulfate D-Chlorophenylmethyl Sulfate D-Chlorophenylmethyl Sulfate Dicyclopentadiene Distributyl Phosphonate Distributyl Rosphonate Distributyl Rosphonate Distributyl Rosphonate Distributyl Rosphonate Dicyclopentadiene Dicyclopentadiene Dicyclopentadiene Distributyl Rosphonate Dicyclopentadiene Dicyclopen	81est	Aldrin	2.5	0/00	CAD001
Chlordene Heachloroxylaethyl Sulfde P-Chlorophenylmethyl Sulfde P-Chlorophenylmethyl Sulfde P-Chlorophenylmethyl Sulfde P-Chlorophenylmethyl Sulfde P-Chlorophenylmethyl Sulfde Dibramochlorophene Dibramochlorophene Discrippentadiene 1 ark	Atrazine	6	6/00	CADOO	
Herachlorocyclopentadiene De-Chlorophenylmethyl Sulfoide P-Chlorophenylmethyl Sulfoide Disyclopentadiene Disyclopentadiene Distribution	81ent	Chlordane	1.7	0/07	CADOO
p-Chlorophenylmethyl Sulfide p-Chlorophenylmethyl Sulfone Dicyclopentadiene Discopropylmethyl Sulfone Discopropylmethyl Sulfone Discopropylmethyl Phosphonate Discopropylmethyl Phosphonate Discopropylmethyl Phosphonate Discopropylmethyl Phosphonate LT 2.8 -01 ug/g Distoloropylmethyl Phosphonate LT 3.6 -01 ug/g Ly 4-0xathlane LT 2.5 -01 ug/g Ly 4-0xathlane Dichlorodiphenylethane Dichlorodiphenylethane Dichlorodiphenylethane Dichlorodiphenylethane Dichlorodiphenylethane Dichlorodiphenylethane LT 3.7 -01 ug/g Dichlorodiphenylethane Carbon Tetrachloride Carbon Tetrachloride Discopromerate Carbon Tetrachloride Chloropenzene Chloropenzene Discopromerate Chloropenzene Discopromerate Chloropenzene LT 2.5 -01 ug/g Chloropenzen	5 Lerrk	Mexachlorocyclopentadiene	5.7	0/00	CADOO1
p-Chlorophenylmethyl Sulfone p-Chlorophenylmethyl Sulfone Dicyclopentadiene Dispersorylmethyl Sulfone Dispersorylmethyl Phosphonate Dispersorylmethyl Phosphonate Dispersorylmethyl Phosphonate LT 1.1 +00 LG 1.4 +00 LG 1.	5) grik	P-Chicrophenylmethyl Sulfide	0	0/00	CADOOL
P-Chlorophenylmethyl Sulfone Dibromochloropane Disciplentadiene Disciplentadiene Disciplentadiene Disciplentadiene Disciplentatisobutyl Phosphonate Disciplentariane Disciplenta	Blank		2.5	0/00	CADO01
Dibromochloropropane Dicyclopentadiene Discolopentadiene Discolopentadiene Discolopentadiene Discolopentadiene Dieldrin Endrin In 1.00 In 109/9 Isodrin Halathion In 4-Oxathiane Dichlorodiphenyltrichloro- Ethane Dichlorodisphenyltrichloro- Ethane Dichloroform Hethyldiaulfide Ethane	S lark		0	0/01	7,000
Dicyclopentadiene Disapropylmethyl Phosphonate Disapropylmethyl Phosphonate Dithiane Dithiane District In 2.5 -01 ua/a Isodrin	Blank			0/07	10024
Disopropylmethyl Phosphonate Dislorin Endrin Endrin In 2.5 -01 ug/g Endrin In 4-0xathlane Dichlorodiphenylethane Dichlorodiphenylethane Chhoro-1(2.4-Dichloropheny) Vinyldiethyl Phosphates Dimethyldisulfide Vinyldiethyl Phosphates Carbon Tetrachloride Chicroform Methylene Chloride Chlorobenzene Dibromochloropropane UT 2.5 -01 ug/g Ug/	Blank	Dicyclopentadiene		0/87	
Dithiane Dieldrin Endrin Endrin In 2.5 -01 Isodrin Halathion 1.4-Oxathiane Dichlorodiphenylethane 2.Chloro-1(2.4-Dichloropheny) Vinyldiethyl Phosphates Dimethyldiaulfide Carbon Tetrachloride Carbon Tetrachloride Chlorobenzene Chloropenzene Chloropenzene Dibromochloropropane LT 2.5 -01 La/9 LT 4.7 -01 La/9 LT 4.7 -01 La/9 Carbon Tetrachloride LT 2.5 -01 La/9 Carbon Tetrachloride LT 2.5 -01 La/9 Chlorobenzene Chloropenzene Chloropenzene LT 2.5 -01 La/9 Chloropenzene LT 2.5 -01 La/9 Chloropenzene LT 2.5 -01 La/9 Chloropenzene LT 2.5 -01 La/9 Chloropenzene LT 2.5 -01 La/9 Chloropenzene LT 2.5 -01 La/9 Chloropenzene LT 2.5 -01 La/9 Chloropenzene LT 2.5 -01 La/9 Chloropenzene LT 2.5 -01 La/9 Chloropenzene LT 2.5 -01 La/9 LT 2.5 -01 La/9 LT 2.5 -01 La/9 LT 2.5 -01 La/9 LT 2.5 -01 La/9 LT 2.5 -01 La/9 LT 2.5 -01 La/9 LT 2.5 -01 La/9 LT 2.5 -01 La/9 LT 2.5 -01 LA/9	#I BI BI	Disopropylmethyl Phosphonate	-	0/07	CADOOL
Dieldrin Endrin Isodrin Isodrin Heisthion I.4-Oxathiane I.6-Oxathiane I.6-Oxathiane Dichlorodiphenyltrichloro- ethane 2-Chloro-1[2,4-Dichloropheny:] Vinyldiethyl Phoaphatea Dimethyldisulfide Carbon Tetrachloride Chloroform Hethylene Chloride Chlorobenzene Chlorobenzene Dibromochloropropane Chloropenzene Chlor	Blenk	Dithiane	8.0	0/05	CADOO1
Endrin Isodrin Isodrin Isodrin Isodrin Isodrin Helathion I.4-Oxathiane I.6-Oxathiane I.6-Oxathiane I.6-Oxathiane I.6-Oxathiane I.6-Oxathiane I.6-Oxathiane I.7-1-01 Iug/g Inchiorodiphenyltrichloro- II 5.7-01 Iug/g Inchiorodiphenyltrichloro- II 6.1-01 Iug/g Inchiorodiphenyltrichloro- II 7.7-01 Iug/g Inchioroform Increform Increform Increform Inchioroform I	4	1 2 2	•	•	
Isodrin Isodrin Isodrin Isodrin Isodrin Isotron Iso	¥ 100 0		2.5	0/00	CADOO1
Haiathion Haiathion Life-Oxathiane Life-Oxathiane Dichlorodiphenylethane Plichlorodiphenylethane 2 Chioro-1[2,4-Dichloropheny]) Vinyldiethyl Phosphates Dimethyldiaulfide Extracolormal Bicycloheptadiene Carbon Tetrachloride Chioropenzene Chioropenzene Dibromochloropronane Life 2,5-01 Life 3,6-01 Life	SIBCK	endrin	4.6	0/00	CAD001
1.4-Oxathiana 1.	¥2010	Isodrin	۰, م	6/6n	CADO01
Dichlorodiphenylethane Dichlorodiphenylethane Dichlorodiphenyltrichloro- Ethane 2.Chloro-1(2.4-Dichloropheny) Vinyldiethyl Phosphates Dimethyldisulfide Bicycloheptadiene Carbon Tetrachloride Chioroform Methylene Chloride Chioropenzene Bibromochloropropane Chioropenzene Dibromochloropropane Chioropentadiene Chioropentad	Are id	Melathion	7.1	0/00	CADOO1
Dichlorodiphenylethane Dichlorodiphenyltrichloro- ethane 2-Chloro-1(2,4-Dichloropheny) Vinyldiethyl Phosphates Dimethyldisulfide Bickloroform Hethylene Chloride Chloropenzene Benzene Dibromochloropropane Dibromochloropropane Dicyclopentadiene Chloropentadiene C	6 Lerak	1.4-Oxethiere	9.8	0/0n	CAD001
Dichlorodiphenyltrichloro- ethane 2-Chloro-1(2,4-Dichloropheny) Vinyldiethyl Phosphates Ushyldiethyl Ushyldiethyl Ushyldiethylene Chloroform Hethylene Chloride Ushyldiethylene Chloride Ushyldiethylene Chloropenzene Ushyldiethylene Chloropenzene Ushyldiethylene Ushyldieth	51 arrk	Dichlorodiphenylethane	6	0/011	CADOOL
ethane 2-Chloro-1(2,4-Dichloropheny) Vinyldiethyl Phosphates Dimethyldiaulfide Bicycloheptadiene Carbon Tetrachloride Chloroform Hethyliane Chloride Chlorobenzene Benzene Chloropenzene	47.60 L 60	Dichlorodipheny trichloro-		· ·	
2.Chloro-1[2,4-Dichloropheny] Vinyldiethyl Phosphates Uinyldiethyl Uinyldi		ethane	;		1000
Vinyldiethyl Phosphates Dimethyldisulfide Bicycloheptadiene Carbon Tetrachloride Chloroform Hethylene Chloride Chlorobenzene Chlorobenzene Chloropenzene Chloropen	51erk	2-Chloro-1(2.4-Dichloropheny)	6.1	0/00	CADOD1
Discription of the control of the co		Vinyldiethyl Phosphates			
Bicycloheptadiene Carbon Tetrachloride Chioroform Hethylene Chloride Chlorobenzene Benzene Dibromochloropropane LT 2.5 -01 ug/g LT 1.5 +00 ug/g LT 1.5 +00 ug/g LT 2.5 -01 ug/g LT 2.5 -01 ug/g LT 2.5 -01 ug/g LT 2.5 -01 ug/g LT 2.5 -01 ug/g Ethylbenzene LT 3.8 -01 ug/g LT 3.9 -01 ug/g LT 2.5 -01 ug/g Ethylbenzene LT 3.5 -01 ug/g LT 3.5 -01 ug/g LT 2.5 -01 ug/g	Blenk	Dimethyldiaulfide	2.0	0/00	CAEDD1
Carbon Tetrachloride Chloroform Hethylene Chloride Chlorobenzene Chlorobenzene Chlorobenzene Chlorobenzene Chloropenzene 61 erk	Bicycloheptadiene	3.6	0/00	CAEDOL	
Chicroform Methylene Chloride Chlorobenzene Chlorobenzene Chlorobenzene Chlorobenzene Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloropropane B)	Carbon Tetrachloride	0	2/61	100347	
Hethylene Chloride Chlorobenzene Chlorobenzene Chlorobenzene Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloromochloropropane Chloropropane	S. Jank	Chichofora		0 / 0 / 0	
Chlorobenzene Benzene Benzene Benzene Bischomochloropropane Bischopentadiene Chinene C	¥8.00	Methylene Chloride		200	
Benzene Dibromochloropropane LT 2.5 -01 ug/g Dicyclopentadiene LT 2.4 +00 ug/g Dicyclopentadiene LT 6.4 -01 ug/g Ethylbenzene LT 3.8 -01 ug/g Tolluene Methylisobutyl Ketone LT 7.5 -01 ug/g	S 201	Chlorobenzene		0/00	TAFOO!
Dibromochloropropane LT 2.4 +00 ug/g Discriptorizediene LT 6.4 -01 ug/g Ethylbenzene LT 3.8 -01 ug/g Toluene Methylisobutyl Ketone LT 2.5 -01 ug/g	Blank	Benzene	2.5	0/07	CAEDO
Dibromochloropropane					
Dicyclopentadiene LT 6.4 -01 ug/g Ethylbenzene LT 3.8 -01 ug/g Tolluene LT 2.5 -01 ug/g Methylisobutyl Ketone LT 7.5 -01 ug/g	81enk	Dibromochloropropane	2.4	0/00	CAEDOL
Ethylbenzene LT 3.8 -01 ug/g Tolluene LT 2.5 -01 ug/g Methylisobutyl Ketone LT 7.5 -01 ug/g	B1 ank	Dicyclopentadiene	6 .4	0/00	CAEDD1
Tolluene Tolluene Methylisobutyl Ketone LT 7.5 -01 ug/g	Blank	Ethylbenzene	3.8	0/00	CAEDO1
Methyllsobutyl Ketone LT 7.5 -01 ug/g	8) ank	Toluene	2.5	0/00	CAEDO1
	81 ank	Methylisobutyl Ketone	7.5	0/00	CAEGGI

Photograph

Summary of Analytical Results

Blanks Associated with Task 10 Chemical Sewers -- South Plants

B Lorx	Blank	Blank	Blank	61 ank	Blank	Riank	Blank	Blank	Blank	B) ank	Blank	Blank	Blank	Blank	Blank	Blank	810天	81 ank	Blank	Blank	Blank	Blook	Blank	Blank	81enk	Blank	Blank	Blank	Riank	8 Lank	Blank	81 ank	TYDe
Chromium	Lead	Codmium	1.2-Dichloroethene	m-Xylene	1,2-Dichloroethane	1,1,2-Trichloroethane	1,1,1-Trichloroethane	1,1-Dichloroethane	Ortho- & Para-Xylene	Trichloroethene	Tetrachloroethene	Methylisobutyl Ketone	Toluene	Ethylbenzene	Dimethyldisulfide	Dicyclopentadiene	Dibromochioropropene	Benzene	Chlorobenzene	Methylene Chloride	Chloroform	Carbon Tetrachloride	Bicycloheptadiene	m-Xylene	1,2-Dichloroethane	1,2-Dichlornethene	1,1,2-Trichloroethmne	1,1,1-Trichloroethmne	1,1-Dichloroethane	Ortho- & Para-Xylene	Irichloroethene	Tetrachloroethene	Analytical Parameters
1.41+01		LT 7.36-01	LT 301	LT 701			LT 301	LT 901		Ç	LT 301		LT 301	LT 301		LT 301		LT 301	LT 3, -01	LT 701			LT 301	LT 7.4 -01		LT 1.7 +00	LT 3.9 -01			LT 4.9 +00	1.7 5.4 -01	LT 2.5 -01	Results
0/0	0/611	e/er	0/6n	0/00	ng/g	ug/g	ug/g	0/Bn	0/0	0/8 u	0/0	0/en	0 / gu	0/en	0/9	ug/g	ug/g	0/0	ug/g	0/gu	ug/g	ug/g	ug/g	ug/g	0/0	0 /0	9/9	0/0	ug/g	0/0	ug/g	u9/9	Units
CAGUU	CAGOO	CAGOOI	CAFOOL	CAFOOI	CAFOOI	CAFOO1	CAFOOI	CAFOOI	CAFOOI	CAFOOI	CAFOOI	CAF001	CAFOOI	CAFOOI	CAFOOI	CAFOOI	CAFOO	CAFOOI	CAFOOI	CAFOO1	CAFOOI	CAFDOI	CAF001	CAEOGI	CAEOOI	CAEDOI	CAEDO	CAEDO1	CAEOOI	CAEDO	CAEDOI	CAEOOI	Number

- April and a

4.09+01 ug/g 2.99+00 ug/g 5.30-02 ug/g 3.55+01 ug/g	2,99+00 ug/g 5,30-02 ug/g 3,55+01 ug/g	5.30-02 ug/g 3.55+01 ug/g	3.55+01 ug/g		4.20+00 ug/g	LT 1.5 +00 ug/g CAL001				4.3 -01 ug/g	LT 3.6 -01 ug/g CALDOI	LT 2.5 -01 ug/g CAL001	LT 2.9 -01 ug/g CAL001	1.5 +00 ug/g	2.5 -01 ua/a	LT 6.4 -01 ug/g CALOO1	3.8 -01 ug/g	2.5 -01 ug/g	2.5 -01 ug/g	LT 4.9 +00 ug/g CAL001	00+ /:1	3.9 -01 ug/g	1.7 +00 ue/e	5.6 -01 ug/g	7.4 -01 ug/g	LT 2.0 +01 ug/g CALDD1	3.0	-01 ua/a		LT 2.0 +00 U4/9 CAMOD1	L1	xtd= 11 3.0 -01 ug/g CAMDD1	
Zinc Arvenic Mercury Chiorogcetic Acid Thiodigiycol Chlorobenzene Dibromochloropropane Methylisobutyl Ketone	Argenic Mercury Chiorogaetic Acid Thiodigiycol Chlorobenzene Dibromochloropropane Methylisobutyl Ketone	Mercury Chloromectic Acid Thiodimized Chlorobenzene Dibromochloropropane Methylisobutyl Ketone	Chloromeetic Acid Thiodiglycol Chlorobenzene Dibromechloropropane Methylisobutyl Ketone	Thiodiglycol Chlorobenzene Dibromcchloropropane Methylisobutyl Ketone	Chlorobenzene Dibromochloropropane Methylisobutyl Ketone	Dibromochloropropene Methylisobutyl Ketone	Methyllsobutyl Ketone			1,1,1-Trichloroethane	Bicycloheptadiene	Carbon Tetrachloride	Chloroform	Methylene Chloride	Benzene	Dicyclopentadiene	Ethylbenzene	Toluene	Tetrachloroethene	Orthon & Para-Xylene	1.1.Ulchlordethane	1.1.2-Trichloroethane	1,2-Dichloroethene	1,2-Dichloroethane	B-Xylene	Dimeth / Idisulfide	Aldrin	Atrastra	Hexachlorocyclopentadiene	Chlordane	p-Chlorophenylmethyl Sulfide	p-Chlorophenylmethyl Sulfox(de	p-Chior ophenyimethyl Sulfone
Blank Blank Blank Blank Blank Blank	Blenk Blenk Blenk Blenk Blenk	81enk 81enk 81enk 81enk	81enk 81enk 81enk	Blenk Blenk	Blenk		Blank	Blank	Blank	Blank	Blank	Blank	Rlank	Block	81enk	Riank	Blank	81enk	Blank	3 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	01001	Blank	Blank	Blank	81.00.TK	Blank	Blenk	Rienk	B. Ank	Blenk	Blank	B.L. ank	Rlank

Blanks Associated with lask 10 Chemical Sewers -- South Plants

Summary of Analytical Presides fhasio Services Incorporated

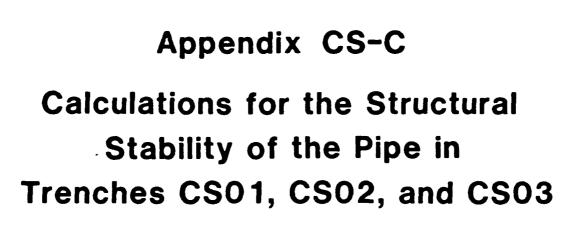
.

Type	Analytical Parameters	œ	Results	Units.	Sample Number
4ri 0 18	Ditromochloropropane	-1	3.0 -01	0/00	CAMOD1
R.J. ank	Dicyclopentadiene	_	1.0 +00	0/00	CAMODI
81 3 rık	Vapons	-	3.0 +00	6/60	CAMOD1
8 lenk	Diisoprobylmethyl Phosphonate	-1	1.0 +00	0/60	CAMODI
Blank	Dithiane	<u>.</u>	4.0 -01	0/00	CAMODI
8 Lenk	Dieldrin	ב	3.0 -01	0/00	CAMOOI
Blank	(.ndr1n	-	5.0 -01	0/00	C AMUO1
Blank	Isodrin	רו	3.0 -01	0/611	CAMODI
8 Lank	Melathion	- 1	7.0 -01	0/00	CAMOD1
Riont	1,4-Oxathiane	_	3.0 -01	0/00	CAMOUI
filank	Utchlorodiphenylethane	ר	6.0 -01	0/00	CAMODI
Blank	Dichlorodiphenyltrichloro- ethane	LI	5.0 -01	0/00	CAMODI
81ank	Parathion	L	9.0 -01	0/00	CAMOOI
Blenk	2-Chloro-1(2,4-Dichlorophenyl)	LT	6.0 -01	0/011	CAMDO1

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Blanks Associated with Task 10 Chemical Severs -- North Plants

		Z	Results	1	51100	Legenz
1 1 1 1	A 1-day in	-		į		1 20
		- 1	·	5	9	י אואם
Blank	Atras ine		'n	Ģ	0/00	BRD00.
Blank	Chlordane	_	?	00+	0/00	BRDD01
Blank	Hexach lonocyc lopentadiene	_	ø	10-	0/00	BRDD01
Blank	b-Chlorophenylmethyl Sulfide	ן,	o.	-01	0/00	8RD001
RIank	p-Chlorophenyimethyl Sulfoxide	-	₽,	-01	0/00	BRDODI
Blank	n-(hloropheny]methyl Sulfone	-	₹,	-01	0/00	RRDUGI
Blank		-	.	-01	0/00	880001
Blank	Dicyc topent adiene	_	_:	00+	0/00	RRDOOL
81 ank	Vapona	11	.	00+	0/00	BRD0U1
Blank	Dilacpropylmethyl Phosphonate	۲	-	00+	0/00	BRDDD1
Blank	Dithiane	-	4	-01	0/00	BRDOOT
Blank	Dieldrin	_	r)	-01	7/00	BRNO11
R.J. ank	Endrin		ć	. 01	6/01	BRDOOL
Blank	Isodrin	-1	r)	10-	0/00	BRDOOL
Blank	Melethion	5	7.	-0	0/00	BRD001
Blank	1.6 - Oxathiane	_	₽)	-01	0/00	BR0001
RIBOK	Dichlorodinhenylethane	1.1	÷	-01	0/00	BROUDI
Blank	Pichlorodiphenyltrichloro-	1	Š	-01	0/00	BRDD01
	ethane					
R.I.arık	Parathion	-1	o.	Ç,	00/00	BR0001
81ank	2-(hloro-1(2,4-Dichlorophenyl) Vinyldjethyl Phosiphates	1	ċ	10.	0/60	8ROON1
Blank	C. admium	-		7.36-01	0/00	BR 1001
R I ank	Chromium		1.0	1.01+01	0/00	BR 1001
RIONK	Copper		1.0	1.07+01	0/00	RR LUDI
Blank	Lead		-	1.15+01	00/00	RRIODI
Rient	710c		**;	3, 56+01	0/011	BP 1001
Riant	Mencin		-	10.01.1	0/00	BR 1001
Blank	(hromitum	ت	ν.	5.2 +00	6/60	BRKOOT
P. J. Brenk	Copper	_	7	00+ &	0/00	BPR (H)
Blank	1,000	_	-		0/01	RRK DID 1
Blank	7100	-	ď	0) 5 + CBD	6/61	RRK OO I



APPENDIX C

Trench CS01

Given Conditions

- o Bedding Class D (the worst per ASTM Cl2-82)
 Therefore, Load Factor (LF) = 1-1
- o Backfill above pipe = 4 ft
- o Trench/Backfill material = clay = 120 lbs/cu ft
- o Three-edge bearing strength (3-EBS) for 6" Dia standard strength vitrified clay pipe per ASTM C700-78a = 1200 lbs/ lin ft

Calculations

- o Trench Earth Load (TEL) = dead load = 600 lb/lin ft
- o Field Supporting Strength (FSS):

o Safety Factor (SF): SF = FSS = 1.320 = 2.2

Conclusions

- o Acceptable Safety Factor per ASTM C12-82: greater than 1.0, but less than 1.5
- Safety Factor is adequate.

Trench CS02

Given Conditions

- o Bedding Class D (the worst per ASTM C12-82)
 Therefore, Load Factor = 1-1
- o Backfill above pipe = 6.5 ft
- Trench/backfill material = clay = 120 lbs/cu ft
- Three-edge bearings strength (3-EBS) for 10" dia standard strength vitrified clay pipe per ASTM C700-78a = 1,600 lbs/lin ft

Calculations

- o Trench Earth Load (TEL) = dead load = 1,250 lb/lin ft
- o Field Supporting Strength (FSS):

FSS = LF X 3=EBS = 1.1 X 1,600 = 1,760 lbs/lin ft.

o Safety Factor (SF): SF = FSS = 1.760 = 1.4 TEL 1,260

Conclusions

- o Acceptable Safety Factor per ASTM C12-82 = greater than 1.0, but less than 1.5
- o Safety Factor is acceptable.

Trench CS03

Given Conditions

- o Bedding Class D (the worst per ASTM C12-82) Therefore, Load Factor = 1-1
- o Backfill above pipe = 10 ft
- o Trench/backfill material = clay = 120 lbs/cu ft
- o Three-edge bearings strength (3-EBS) for 8" dia standard strength vitrified clay pipe per ASTM C700-78a = 1,400 lbs/lin ft

Calculations

- o Trench Earth Load (TEL) = dead load = 1,450 lb/lin ft
- Field Supporting Strength (FSS):
 FSS = LF X 3-EBS

 $= 1.1 \times 1,400 = 1,540$ lbs/lin ft

o Safety Factor (SF): SF = FSS = 1.540 = 1.06 TEL 1,450

Conclusions

- o Acceptable Safety Factor per ASTM C12-82 = greater than 1.0, but less than 1.5
- o Safety Factor is acceptable.

Appendix CS-D

Comments and Responses

Shell Oil Company



c/o Holms Roberts & Owen Suite 1800 1700 Broadway Denver, CO 80290

April 22, 1988

Office of the Program Manager for Rocky Mountain Arsenal ATTN: AMXRM-PM: Mr. Donald L. Campbell Building E-4460 Aberdeen Proving Ground, Maryland 21010-5401

Dear Mr. Campbell:

Enclosed herewith are Shell Oil's comments on two Draft Final Contamination Assessment Reports: Process Water System, Task No. 10, February 1988, and Chemical Sewer - North Plants and Chemical Sewer - South Plants, Task No. 10, March 1988.

Sincerely,

(. K. 1201) ---

C. K. Hahn Manager

Denver Site Project

RDL: ajg

Enclosure

CC: (w/enclosure)
Office of the Program Manager for Rocky Mountain Arsenal
ATTN: AMXRM-RP: Mr. Kevin T. Blose, Acting Chief
Aberdeen Proving Ground, Maryland 21010-5401

Office of the Program Manager for Rocky Mountain Arsenal ATTN: AMXRM-T): Mr. Brian L. Anderson Commerce City, Colorado 80022-2180



RESPONSES TO COMMENTS OF SHELL OIL COMPANY ON

DRAFT FINAL CONTAMINATION ASSESSMENT REPORT CHEMICAL SEWERS - NORTH PLANTS AND SOUTH PLANTS

Chemical Sewer - North Plants

Comment 1: Page 9. 2.0 History.

Reference should be made to the History section in the Contamination Assessment Report on the North Plants Complex, Task 42, which contains a more detailed description of major operations conducted in the North Plants Complex.

The operating period for the manufacture of GB should be noted.

Response: A reference to the history section of the North Plants

Contamination Assessment Report has been added to the text. The operating period for the manufacture of GB has also been noted.

Comment 2: Page 11, last sentence (which carries over to page 12).

A similar study was also performed by Parsons in 1954.

Response: The Parsons document has been reviewed and the pertinent

information has been added to the text.

Comment 3: Page 12, first full paragraph.

In the fourth sentence, the phase "... two orders of magnitude less than what was being generated in the South Plants manufacturing area. .." is irrelevant to this investigation of the North Plant's chemical sewer and should be deleted.

In the fifth sentence, a description of the chemical composition of neutralized off-standard batches of agents routed to the 1727 sump should be added.

Response:

The comparison to the amount of waste generated in South Plants has been eliminated. In addition, results from this study regarding waste flows in the South Plants area have been added to the history section in the South Plants portion of this report.

The USAEHA report (1965) does not include a description of the chemical composition of neutralized agents routed to the 1727 sump.

Comment 4: Page 35, last paragraph.

At best, results of this investigation can only be extrapolated over the VCP portion of the North Plants chemical sewer. Since there is no investigation of any kind of the cast iron and steel sections or within the North Plants proper, the assumption that the VCP sections represent a worse-case estimate of leakage is unwarranted.

Response:

Investigation of the cast iron collection system (upsteam of sump 1727) and the pressurized line from the sump to Manhole 5-4 would have been impractical. The sewers study was based on investigations of "worst-case" pipe conditions. That is, those sections of the pipe, based on type of construction and historic information, that were suspected to contain breaks or leaks. The collection system in the North Plants proper has no manholes, and therefore hasn't been subject to video and visual inspections as other parts of the chemical sewer have. With no knowledge of leaks or breaks, any attempt to locate such a point on the collection system would have been random and impractical for this study. The only documented leak in the cast iron collection system of North Plants is the leakage associated with repair of the system on the east side of Building 1501 in approximately 1979 (Mitchell, 1986). Unfortunately, the location was not identified even imprecisely. Additionally, the extensive underground process and utility pipelines in this area limit access to the chemical sewer and could prevent identification of the sewer as the source of any contamination found in this area. The only other portion of the chemical sewer serving North Plants that is suspected to have leaked is the VCP section. Therefore, this was the section investigated by the field program.

Limited soil sampling was conducted near the chemical sewer in North Plants proper as part of the Task 42 Phase I and Phase II investigations. Two alluvial monitoring wells were installed directly adjacent to the chemical sewer and another was installed downgradient to track potential contamination in the groundwater (Ebasco, 1988b).

The pressure line between the sump 1727 and Manhole 5-4 was assumed not to have leaked. Leaks and breaks in pressurized lines become obvious and are easily identified. No records of broken or leaking pipes have been found for this portion of the line.

Comment 5: Page 36. 3.3 Follow-on Survey.

Since there has been no investigation of the chemical sewer in the North Plants proper, how could it be determined in the Feasibility Study that no additional information is required? Inspection of the chemical sewer system within North Plants, along with some soil sampling, should be scheduled prior to the design phase. The proposed follow-on work, which only involves further sampling of the MKE trenches, does not address the knowledge gap associated with the chemical sever system in North Plants proper.

Response:

The volume of potentially contaminated soil for the North Plants chemical sewer was based on conservative estimates for contamination that could be associated with the entire chemical sewer, including the segments in North Plants proper. The estimates are based on the "worst-case" extent of contamination found for the South Plants chemical sewer, a system that is older, more deteriorated, and used more frequently than the North Plants system.

The Feasibility Study will use the estimated volume of potentially contaminated soil to screen potential alternatives and reduce the number of alternatives requiring detailed analysis. Following the screening process, if information on the extent and type of soil contamination associated with the North Plants chemical sewer is insufficient to perform detailed analyses of the remaining alternatives, an additional contamination assessment will be conducted. This assessment will be focused to collect only those data needed to fully evaluate the remediation options of choice. The proposed follow-on work presents a program to collect some of this additional information. Refinements and additions to this program can be made after the requirements for the Feasibility Study are determined. Therefore, data to fill the "knowledge gap" will be collected if needed to support the cleanup activities for Rocky Mountain Arsenal.

Comment 6: Page 39. 3.4.

Shell maintains that it is inappropriate to calculate the estimated volumes of potentially contaminated soil prior to the determination of preliminary action levels. In this particular example there is insufficient data to even attempt such a calculation.

Response:

The preliminary estimated volume of potentially contaminated soil is intended to provide a worst-case scenario only. An exact determination of the extent of contamination can only be obtained during remediation activities. Thus, this estimate of potentially contaminated soil should provide conservative estimates that are greater than actual values. These estimates provide a preliminary volume estimate for evaluating potential remedial alternatives during the Feasibility Study. The need to refine these estimates will be determined during the Feasibility Study.

Chemical Sewer - South Plants

Comment 1: Page 1, second paragraph.

> In the fifth sentence, hydrazine wastes continued to flow through the gravity system to Basin F until 1982.

The text has been changed to reflect this exception to the Response:

statement that the Army stopped using the gravity chemical sewer

system in the late 1970s.

Comment 2: Page 3, third full sentence.

> It should be noted that connections listed in Table CS-SP-1 do not represent any chronology of events. Different buildings

were connected and unconnected at different times.

The buildings listed in Table CS-SP-1 are ordered by building Response:

number, not by the chronological order of connection or

disconnection. A sentence has been added to the text to clarify any misunderstandings concerning information presented in this

table.

Comment 3: Table CS-SP-1, page 6.

Activities listed under Buildings 514 and 514A may be reversed.

Also, organo phosphate manufacturing should be listed under

Building 514.

The building descriptions for Buildings 514 and 514A have been Response:

exchanged in Table CS-SP-1. In addition, the description for Building 514 had been expanded to include the manufacture of chlordane and "Strauss Hex" (1947 to 1952), and pesticide production by Shell Chemical Company (1951 to 1981). The organophosphorous pesticides parathion and vapona are included

in the list of pesticides manufactured in Building 514.

Comment 4: Page 9, last sentence (which ends on page 10).

The Process Water Distribution System draft Phase I

Contamination Assessment Report states that the natural bedrock

high in this area may also contribute to the groundwater mound.

Response: The text has been changed to include the natural bedrock high as

possibly contributing to the groundwater mound in the South

Plants.

Comment 5: Page 12, last paragraph.

> "Because these compounds are representative of the class of chemicals typically found in the groundwater beneath the South

> Plants Manufacturing Complex, their presence in the groundwater

beneath South Plants does not indicate that the sewer line is contributing to groundwater contamination."

This paragraph should be either deleted or <u>by itself</u> should be inserted between <u>not</u> and <u>indicate</u>.

Response:

The words "by itself" have been added to the text between the words "not" and "indicate."

Comment 6:

Page 13, second paragraph.

Julius Hyman leased facilities at the RMA in the spring of 1947 as did CF&I. In 1949, Julius Hyman assumed a portion of the CF&I lease.

Response:

The text has been changed and now states that Julius Hyman and Company leased facilities at the RMA in the spring of 1947 as did Colorado Fuel and Iron. In 1949 Julius Hyman and Company assumed a portion of the Colorado Fuel and Iron lease (RSN001 F 0875).

Comment 7:

Page 14. 1942, second paragraph.

Originally, only wastes from the acetylene plant were pumped to the lime settling basins. Wastes from mustard production flowed directly to Basin A, and wastes from lewisite manufacture flowed first to M-1 pits and then to Basin A (RMA, Undated).

Response:

The text has been changed to clarify the destination of the noted waste streams.

Comment 8:

Page 14. 1942, third paragraph.

Building 331 was also used for M70 burster well renovation which included electrolyte processes involving chromium containing solutions. Waste from that operation was carried to Sand Creek Lateral.

Response:

According to the building survey conducted by Ebasco under Task 24, the M-70 burster tube renovation in Building 331 didn't occur until the last quarter of 1952 (Ebasco, 1988b). The paragraph referred to in the comment describes the chemical sewer in 1942, and therefore will not be changed.

Comment 9:

Page 15, 1953.

In 1953 acid wastes from dichloro production caused the decomposition of the cement joints (RIA001 0594). The dichlor wastes were temporarily run by an open ditch (RIA002 0498 and RMA060 1933) to Sand Creek Lateral. Ultimately, the chemical sewer line was replaced (RIA002 1514).

Response: The referenced documents have been reviewed and information has

been added to both the 1951 and the 1953 descriptions of

activities.

Comment 10: Page 18. 1976.

In 1976 a new VCP sewer line from the laundry and lab was constructed across "D" Street and connected to the original

caustic line that discharged to Basin F.

Response: The text has been changed to include the addition of this line.

Field observations by Ebasco personnnel show that the pipe is

concrete, not VCP.

Comment 11: Page 19. 1980.

The new overhead system was completed in early 1982.

Response: The MKE Interim Report: Phase I of Rocky Mountain Arsenal Sewer

Investigations was consulted to verify this date, but the

information was not found. The text will not be changed unless

a reference is located.

Comment 12: Page 21, first sentence.

Numerous investigations of the chemical sewer system also

occurred in the late 1970's.

Response: The Rocky Mountain Arsenal Information Center catalog was

reviewed to identify relevant studies. Without specific report titles or source organizations, additional information will not

be added to the chemical sewers report.

Comment 13: Page 21, first full paragraph.

Parsons in 1954 also investigated the source, volume and

composition of the industrial wastes generated at the RMA

Response: Information from a 1955 Parsons report has been added to the

text. No other reports by Parsons were found.

Comment 14: Page 100, Figure CS-SP-61.

This is a VCP, not concrete pipe.

Response: Field observations by Ebasco personnel have determined that this

192

section of pipe is concrete.

Comment 15: Page 158. Manhole 6-1.

Tetrachloroethane was the solvent used for removing impregnate

from 1943-1964. Tetrachloroethane readily hydrolyzes to trichloroethanes. The presence of these substances may be

attributable to the laundry.

- -

Site CS-SP 0097U/0185A Rev. 9/14/88

Response:

As stated in Section 2, History, in 1957 Buildings 314 (the laundry) and 313 (the lab) were connected to the chemical sewer by a lateral going east to Manhole W21. It wasn't until 1976 that the Army ran a lateral from these two buildings west to Manhole 6 in the old chlorine plant area (MKE, 1986). This included construction of Manholes 6-1, 6-2, 6-3, and 6-4. Wastes from the laundry didn't flow through Manhole 6-1 until 12 years after the Army had stoped removing the impregnate from protective clothing with the solvents found beneath Manhole 6-1.

The paragraph under consideration will not be changed. An entry has been added to the history section to include the changes made in 1976, as requested in Comment 10.

Comment 16: Plate CS-SP-1

The manholes immediately south and slightly west of the western-most Section 36 lime basin are not correctly shown. Only one manhole exists here, and it is believed to be on the original 30" line to Basin A. The 30" line is shown on the map as removed, which is incorrect. This line is the only sewer north of December 7th Avenue that is still in place. MKE has observed that it is flooded due to its being plugged at its discharge point by the second lime basin.

Response:

Field investigations by Ebasco have verified the configuration of the chemical sewers in this area (Gabel, 1987). Plate CS-SP-1 has not been changed.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VI

999 18th STREET - SUITE 500 DENVER, COLORADO 80202-2405

MAY 16 1000

Ref: 8HWM-SR

Colonel W. N. Quintrell
Program Manager
AMXRM-EE Department of the Army
U.S. Army Toxic and Hazardous Materials Agency
Building 4460
Aberdeen Proving Ground, Maryland 21010-5401

Re: Rocky Mountain Arsenal, (RMA), Task 10, Chemical Sewers, North Plants and South Plants, Draft Final Phase I Contamination Assessment Report, February, 1988.

Dear Colonel Quintrell:

We have reviewed the above referenced report and have the enclosed comments from our contractor. Our contact on this matter is Mr. Connally Mears at (303) 293-1528.

Sincerely yours,

Connally Mears
EPA Coordinator

for Rocky Mountain Arsenal Cleanup

Enclosure

CC: Thomas P. Looby, CDH
David Shelton, CDH
Lt. Col. Scott P. Isaacson
Chris Hahn, Shell Oil Company
R. D. Lundahl, Shell Oil Company
Thomas Bick, Department of Justice
David Anderson, Department of Justice
Preston Chiaro, EBASCO

RESPONSES TO COMMENTS OF U.S. ENVIRONMENTAL PROTECTION AGENCY ON DRAFT FINAL CONTAMINATION ASSESSMENT REPORT CHEMICAL SEVERS - NORTH PLANTS AND SOUTH PLANTS

Comment 1

Page 9. first sentence and page 34. last paragraph. It is stated that pesticide related compounds probably are not related to North Plants operations. However, in Trench MKE 22, aldrin was detected at a concentration of 0.64 ug/g directly underneath the pipe. This indicates that pesticides may have exfiltrated from the chemical sewer. We recommend that the source of these pesticides be investigated during the RMA Feasibility Study (page 36, first paragraph); for example, the potential for contamination of soil from a process water source should be investigated. We also recommend that the maximum depth of contamination underneath the pipe be determined at this same time.

Response:

Aldrin was detected in one sample collected by MKE but was not confirmed in samples collected by Ebasco at the same location. A follow-on investigation has been recommended if the Feasibility Study determines that additional information on the presence of potential contamination is needed. The recommended follow-on work includes additional sampling 1 ft and 5 ft from the pipe and extending to the water table. Samples collected as part of the follow-on work will be analyzed for most of the Phase I analytes, including semivolatile organics, the method that detects aldrin. If the recommended follow-on work is undertaken, the extent of potential contamination beneath the pipe will be redefined and the presence of analytes detected in the initial sampling program will be verified.

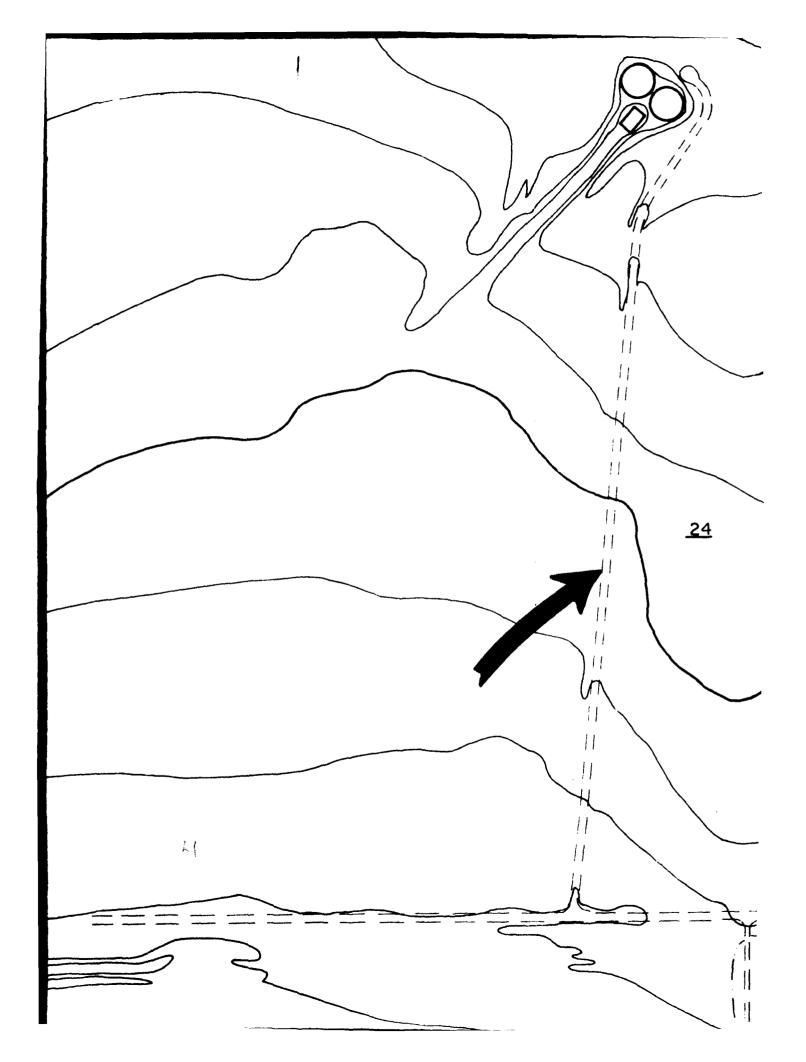
RESPONSES TO COMMENTS CF THE COLORADO DEPARIMENT OF HEALTH ON DRAFT FINAL CONTAMINATION ASSESSMENT REPORT CHEMICAL SEWERS - NORTH PLANTS AND SOUTH PLANTS

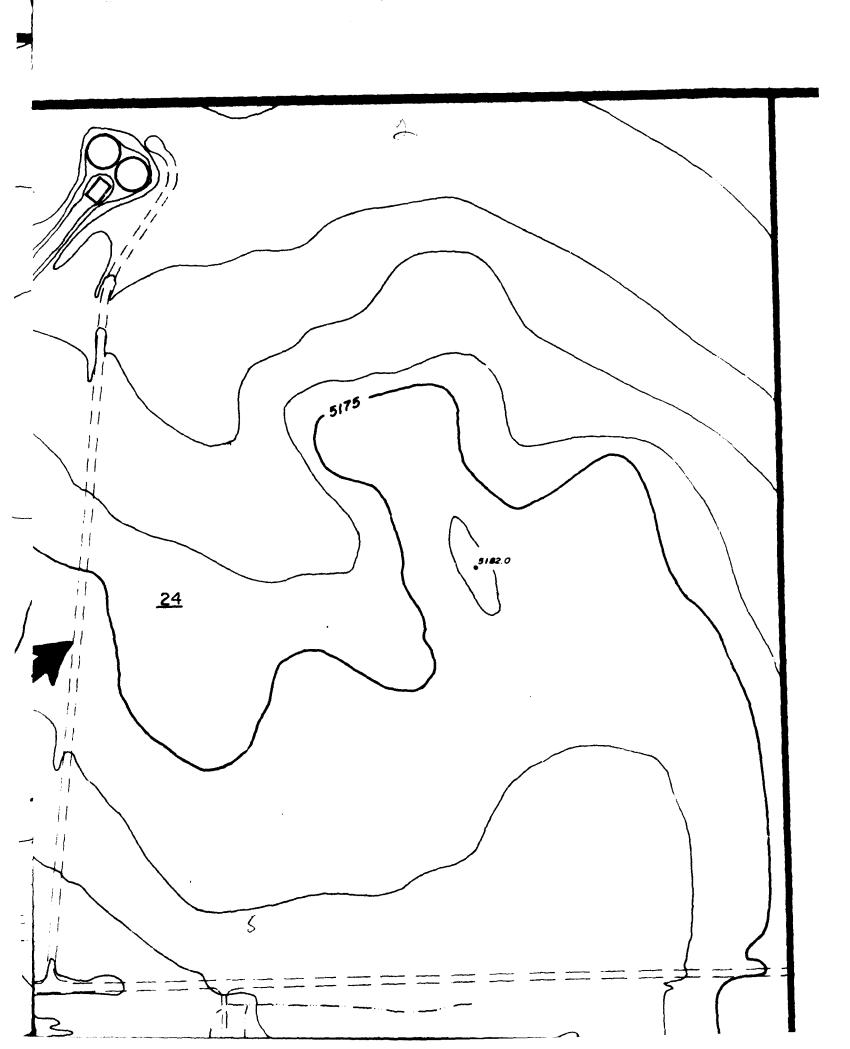
No comments have been received.

195

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Site CS-SP 0097U/0185A Rev. 9/14/88





Legend

Building, E	Existir	ıc
-------------	---------	----

Road, Paved

===== Road, Unpaved

24 Section Number

++++ Railroad

____ Sewer Main, with Size

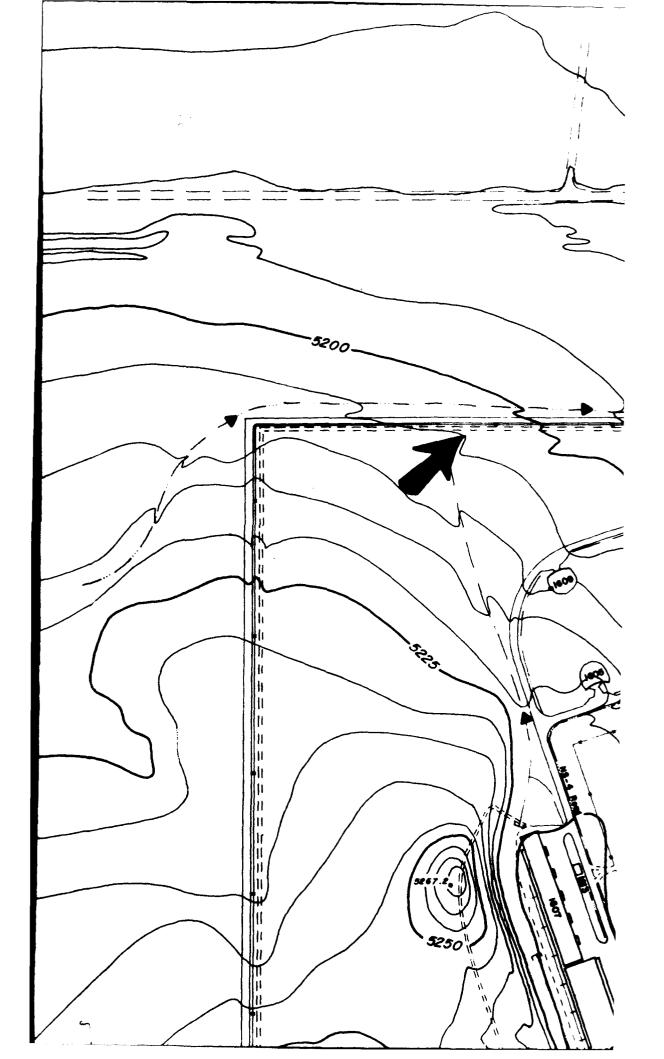
•534 Manhole, with Number

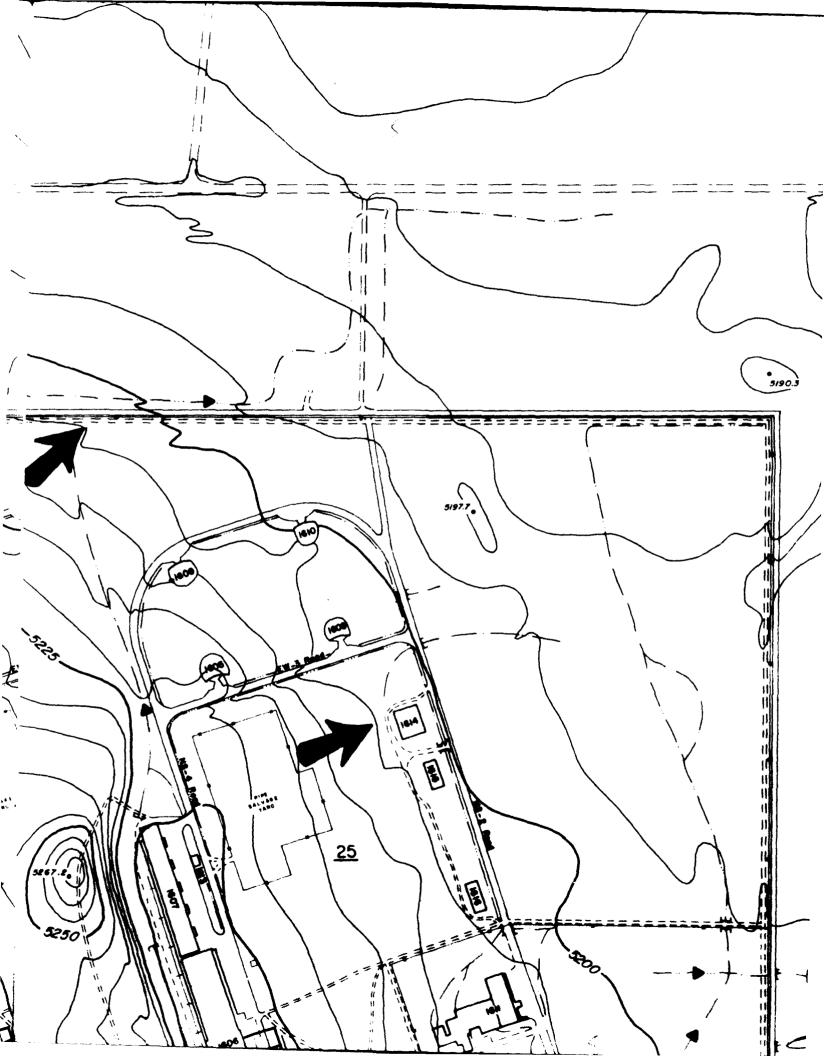
Pumping Station

[--- Plugged Line

Stream or Ditch and Direction of Water Flow

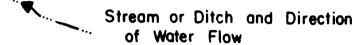








[-- Plugged Line



Predominant Direction of Surface Water Flow

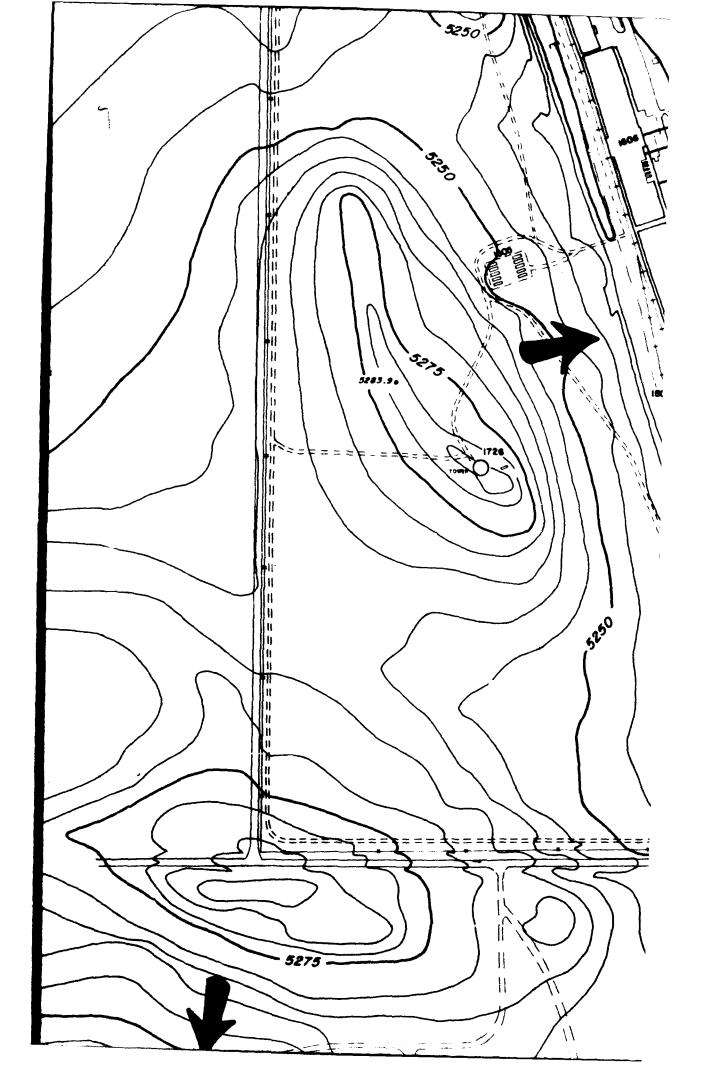
Ground Elevation Above Mean
Sea Level

Direction of Flow within Sewer Line

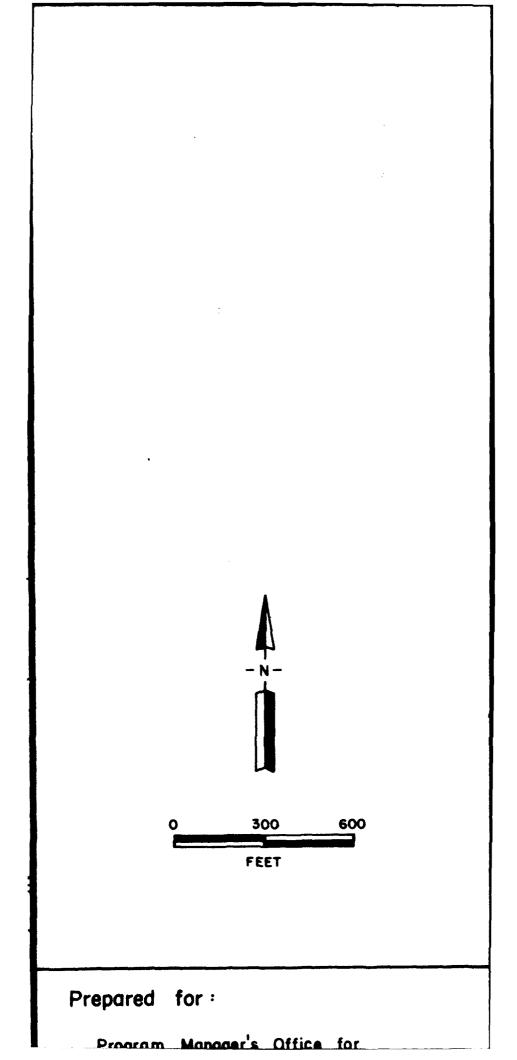
× × Fence

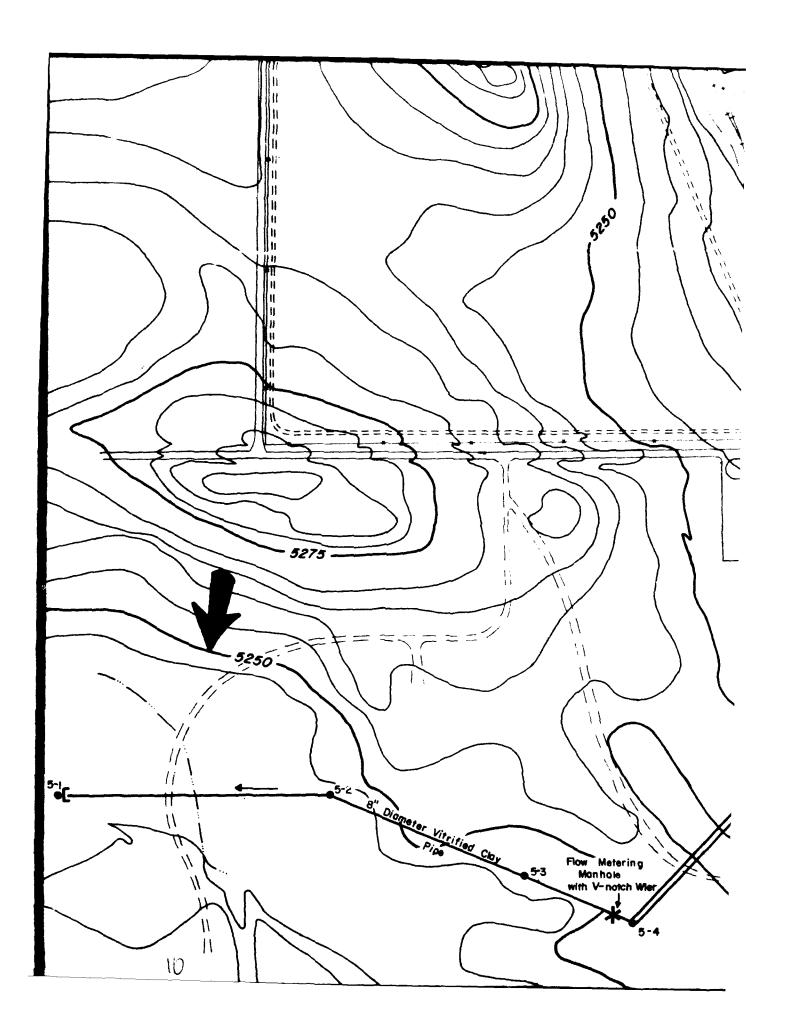
Contour Interval is 5 Feet

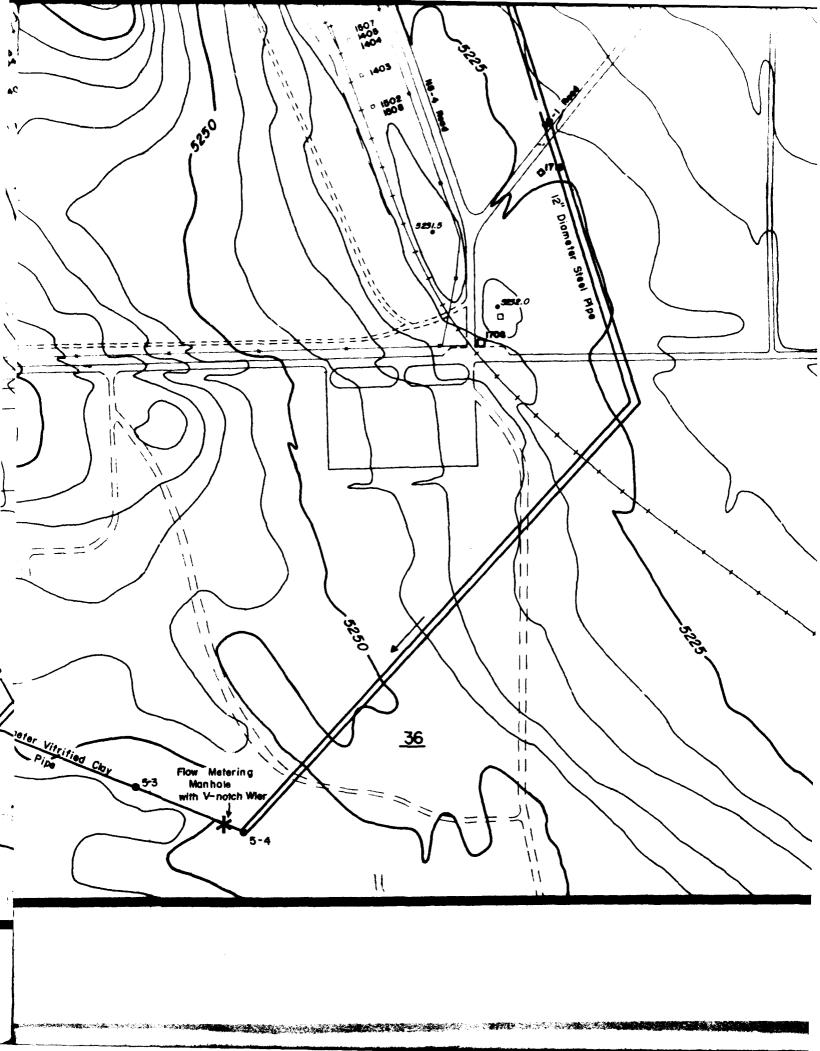
Note: All piping is cast iron unless otherwise noted.

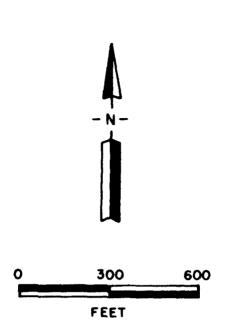












Prepared for:

Program Manager's Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground, Maryland

Drafted: 12/8/87

PLATE CS-NP-2

Topography and Surface Drainage

Rocky Mountain Arsenal, Task 10

Prepared by: Ebasco Services Incorporated

<u>24</u>

Legend

Building, Existing

Road, Paved

zzzzz Road, Unpaved

24 Section Number

+++ Railroad

- ... Ditches

 $\frac{6}{100}$ Sewer Main, with Size

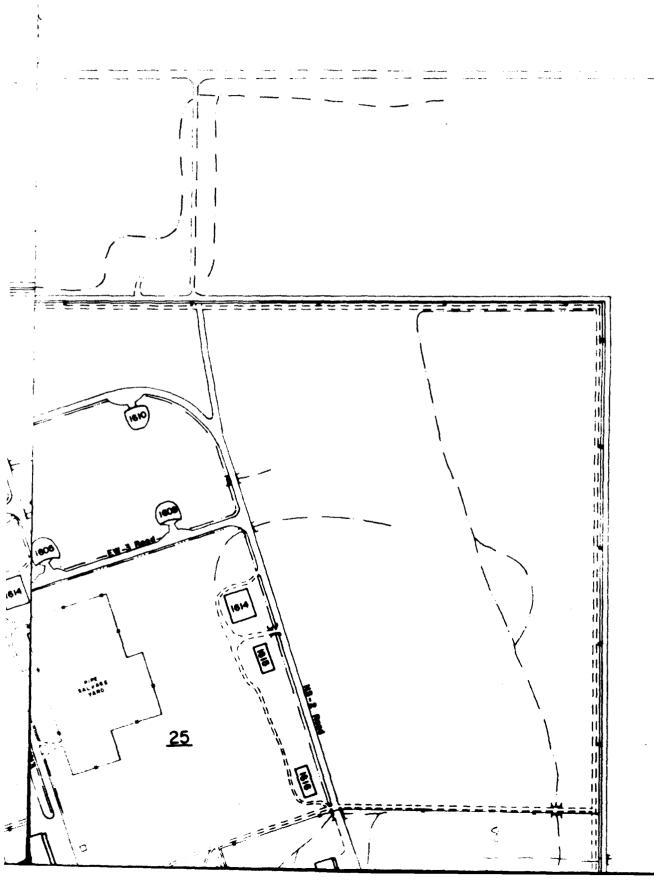
[---- Plugged Line

Arrow Indicates Direction of Flow

5-4• Manhole, with Number

Manhole Inspected During Survey

<u>25</u>



Sewer Main, with Size

Plugged Line

Arrow Indicates Direction of Flow

Manhole, with Number

Manhole Inspected During Survey

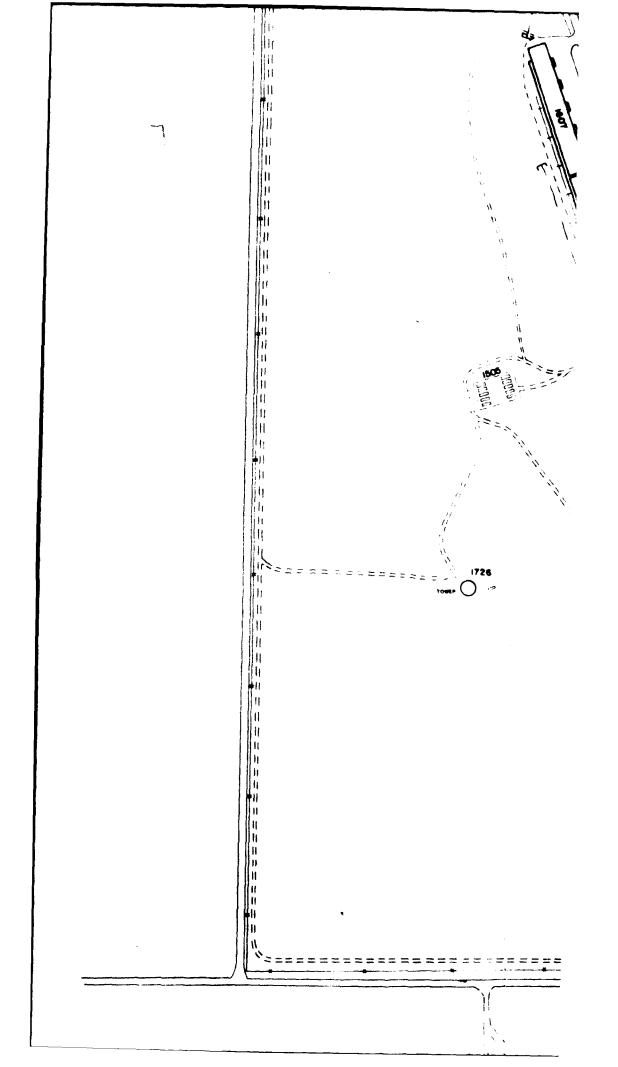
Pumping Station

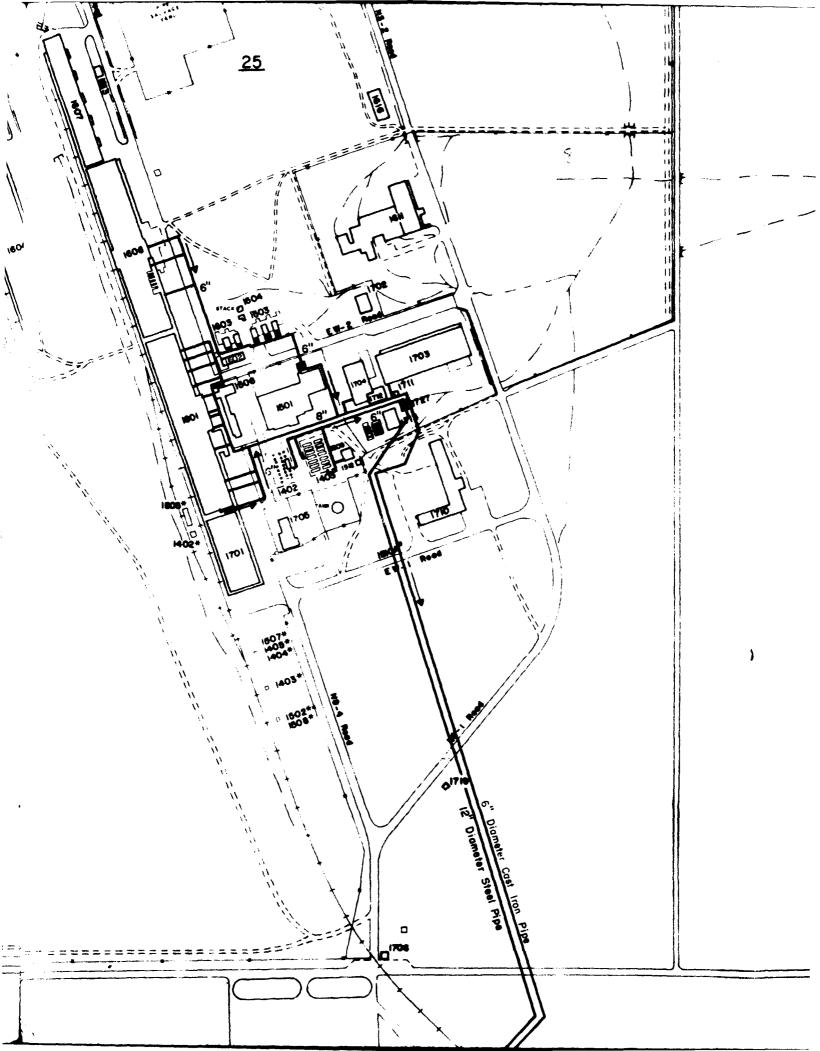
Fence

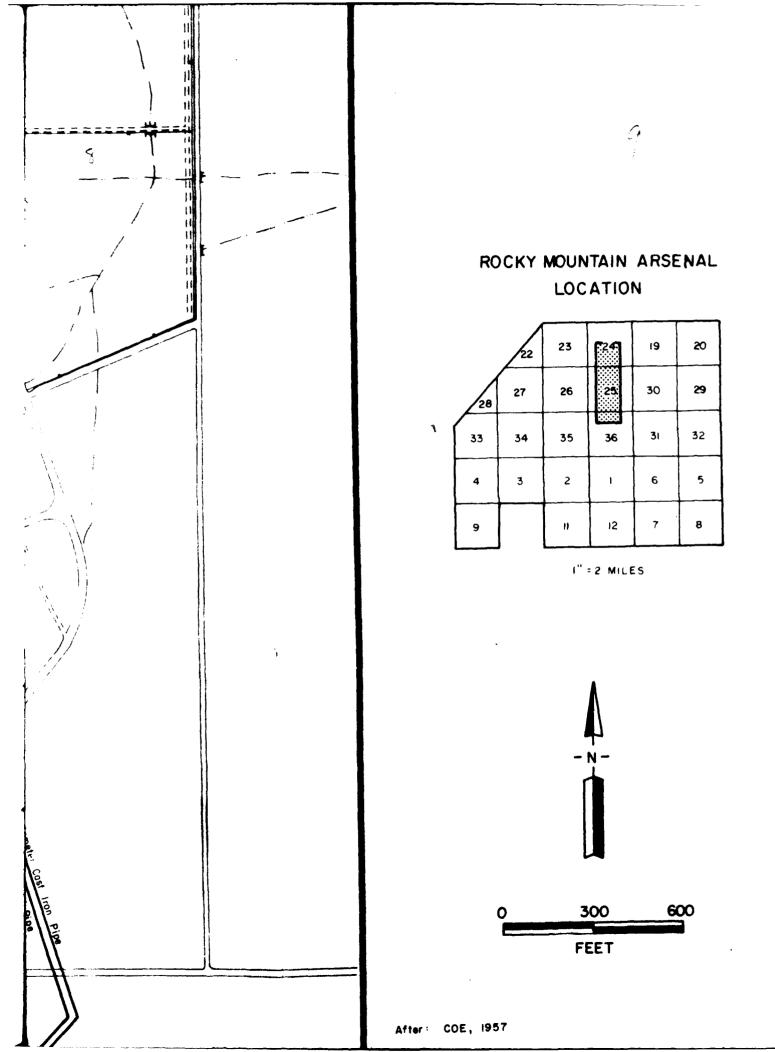
Trench

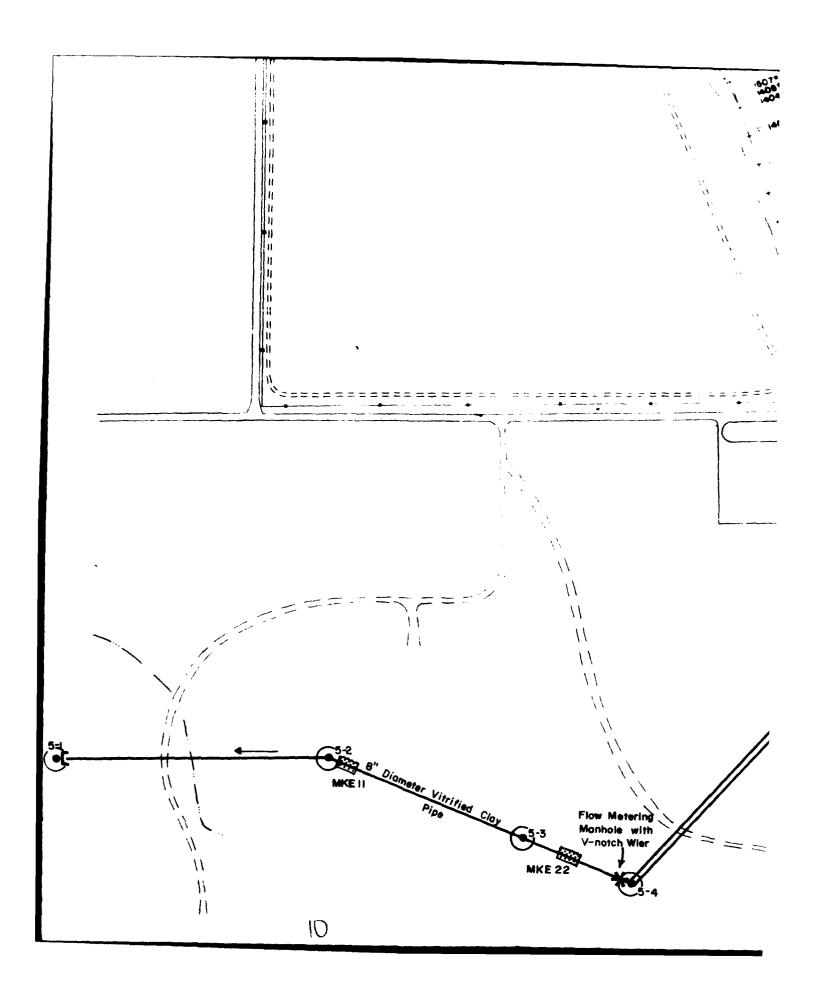
Loading Dock

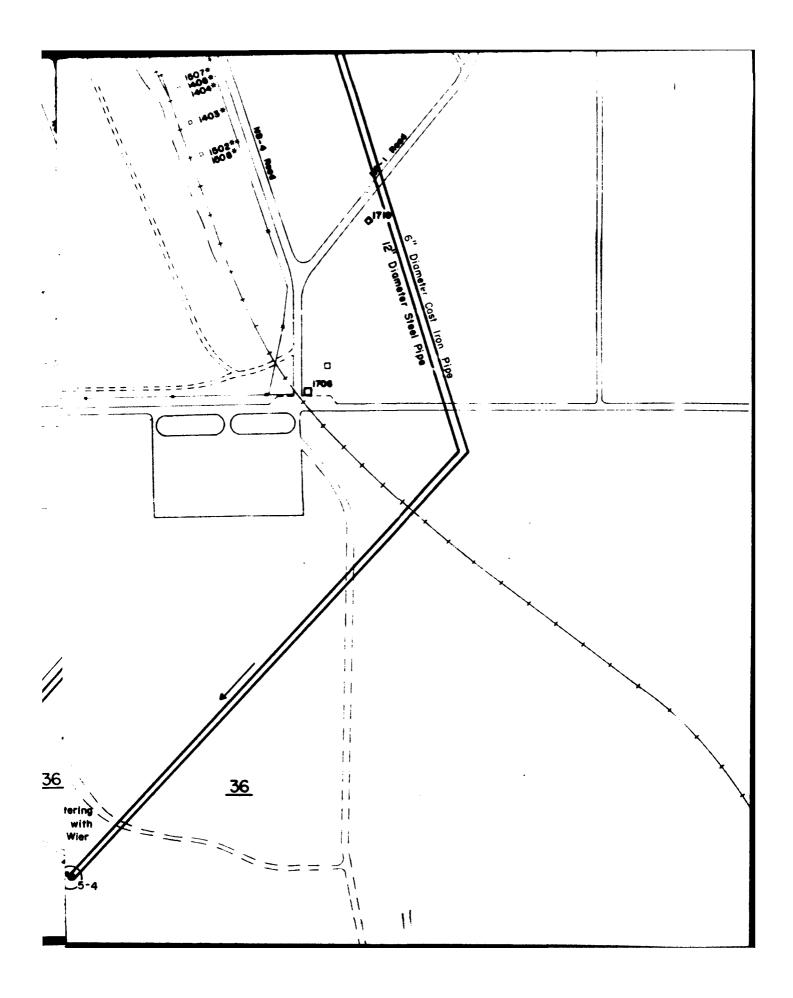
Note: All piping is cast iron unless otherwise noted.

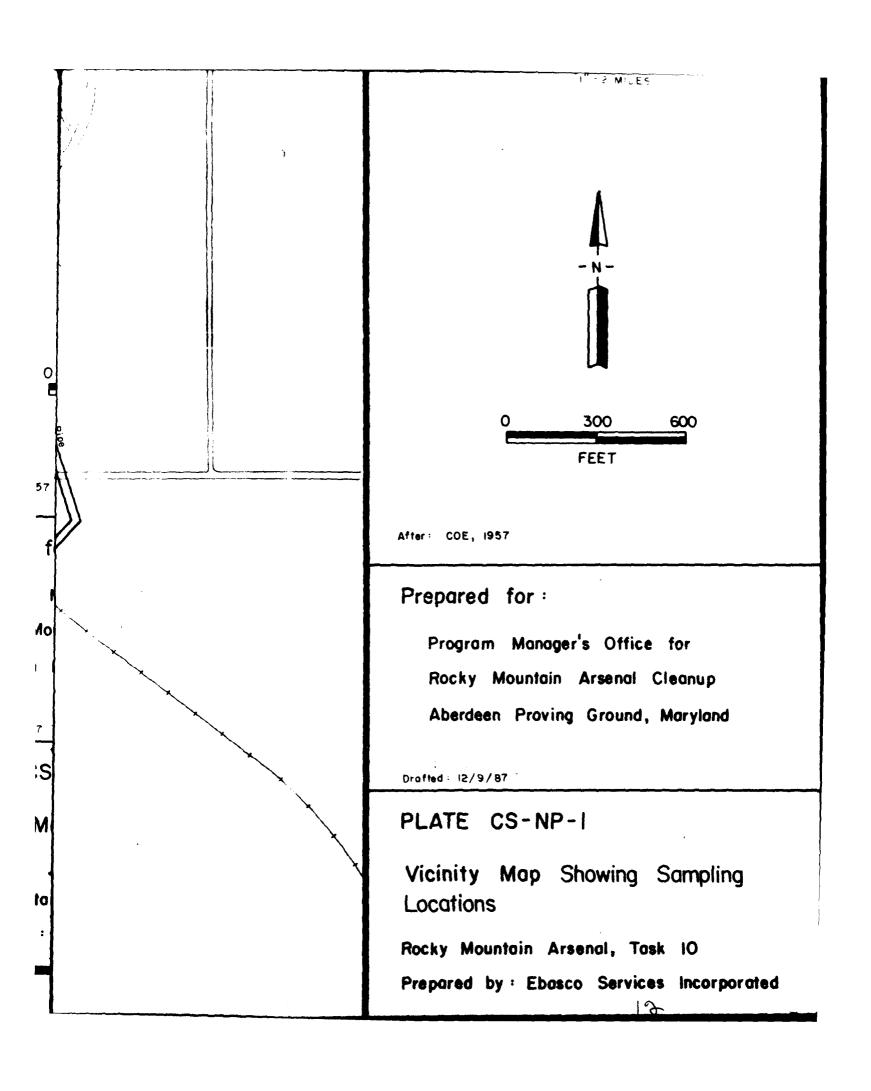


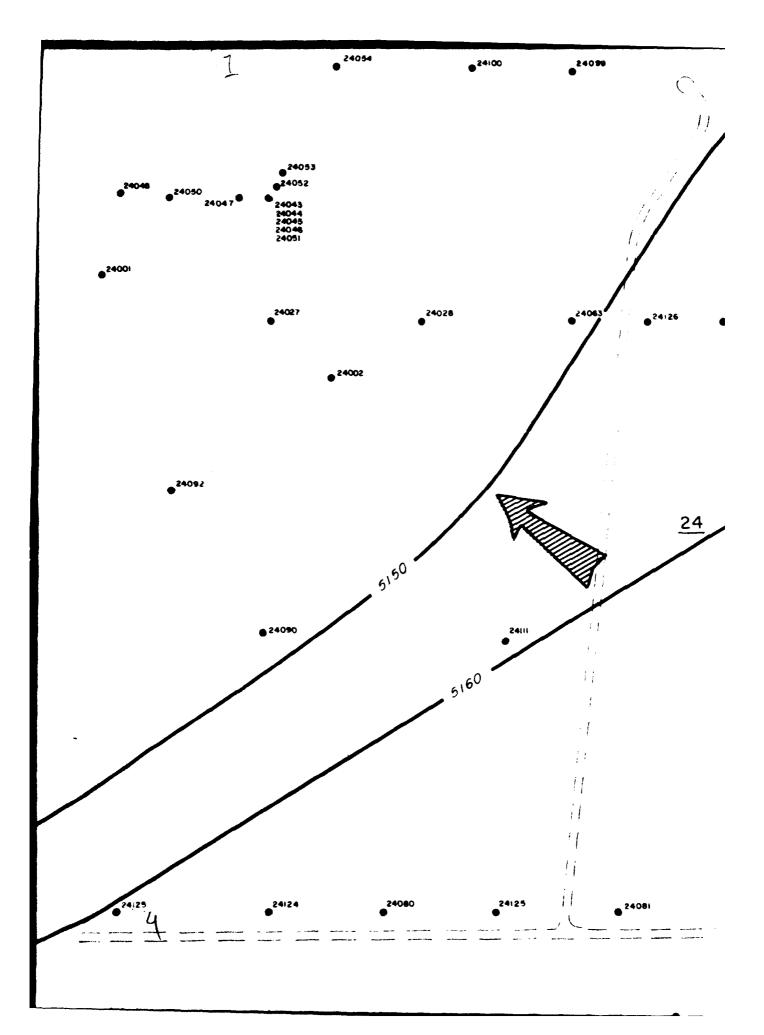


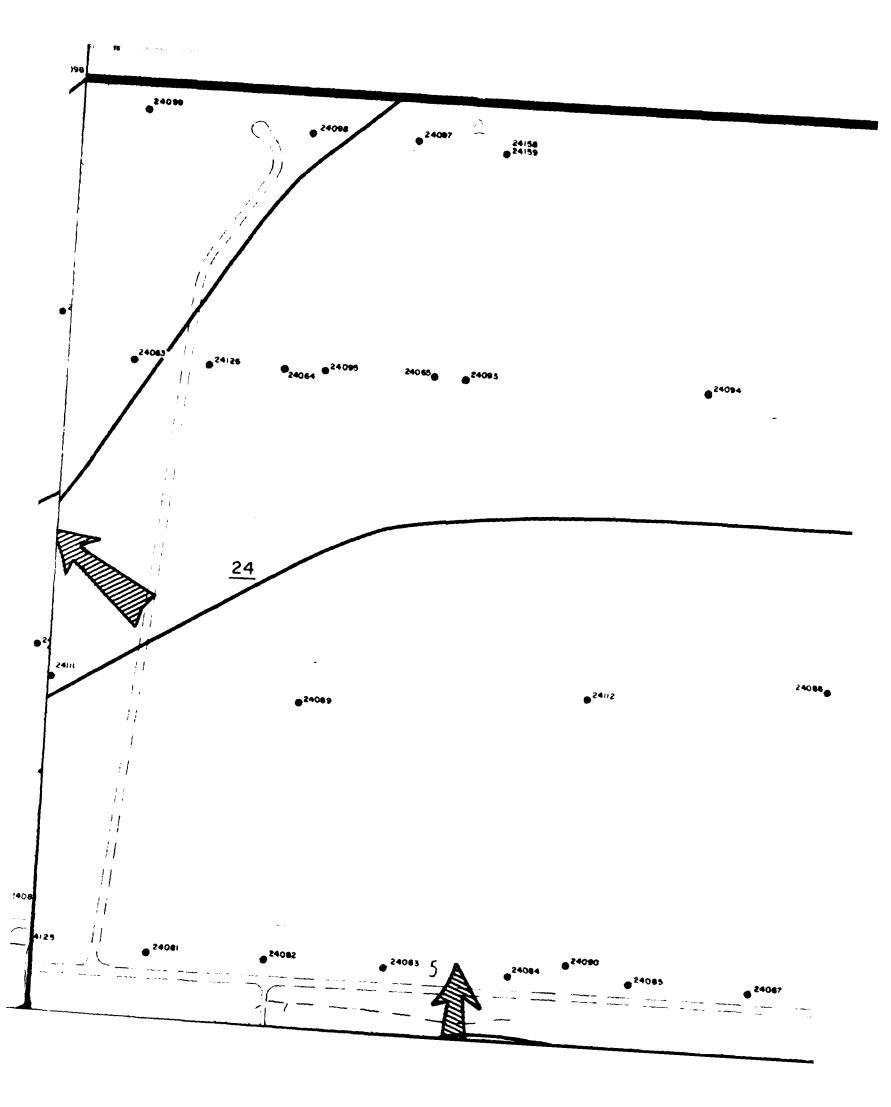












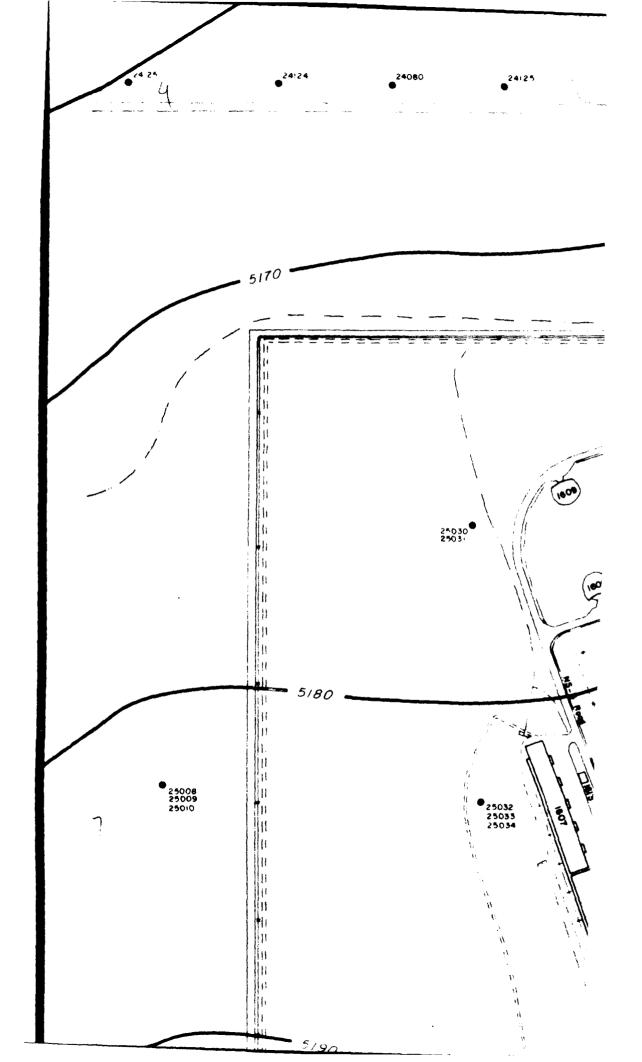
Legend

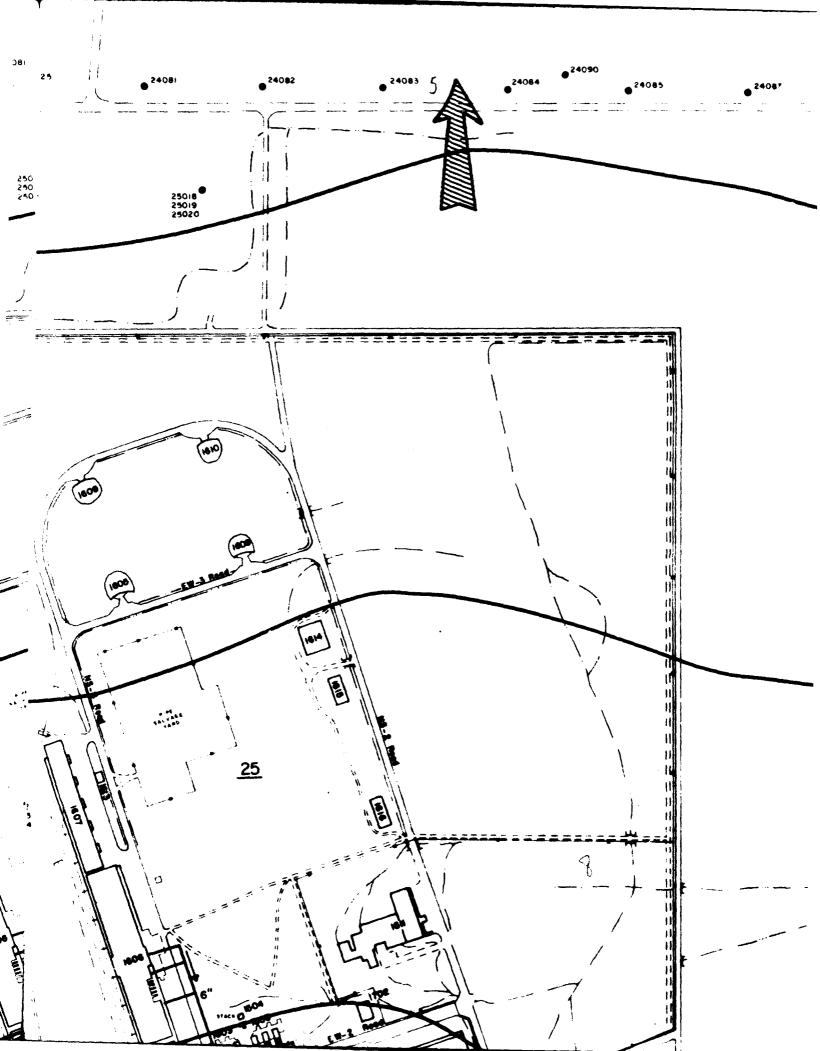
7

- Building, Existing
- Road, Paved
- ==== Road, Unpaved
 - 24 Section Number
- +++ Railroad
- ____ Sewer Main, with Size
 - Manhole, with Number
 - Pumping Station
 - ●²⁵⁰³ Monitoring Well



Water Table Elevation







General Direction of Groundwater Flow

6

___ 5189___

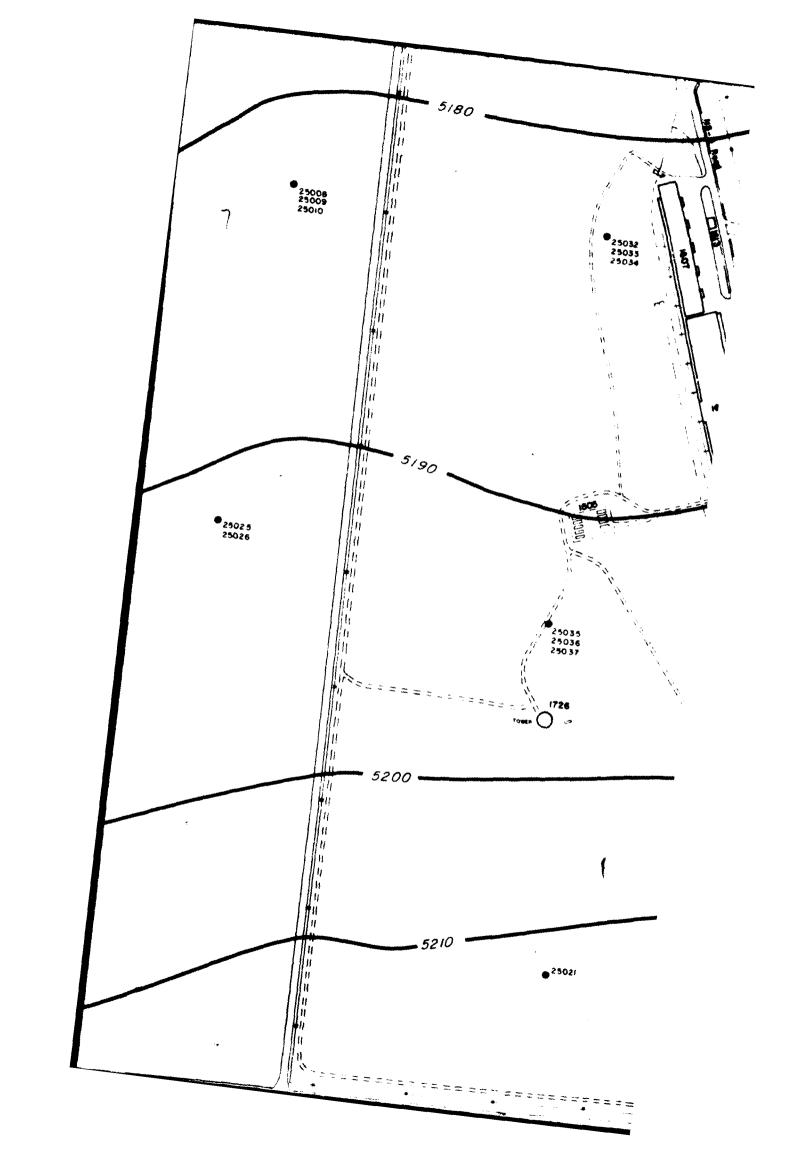
Water Table Elevation

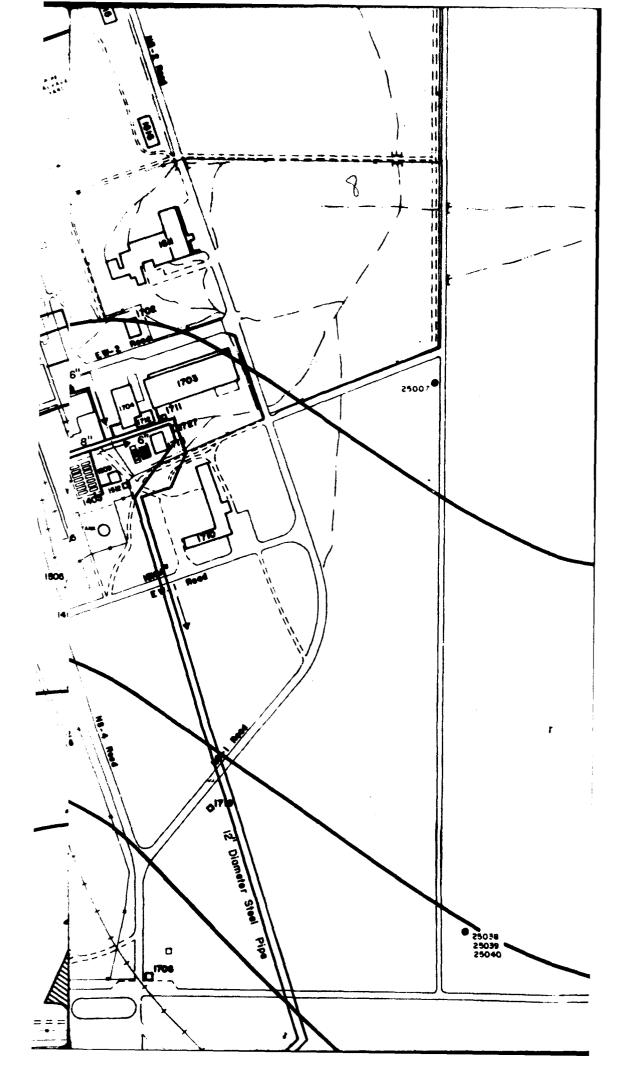
Direction of Flow within Sewer Line

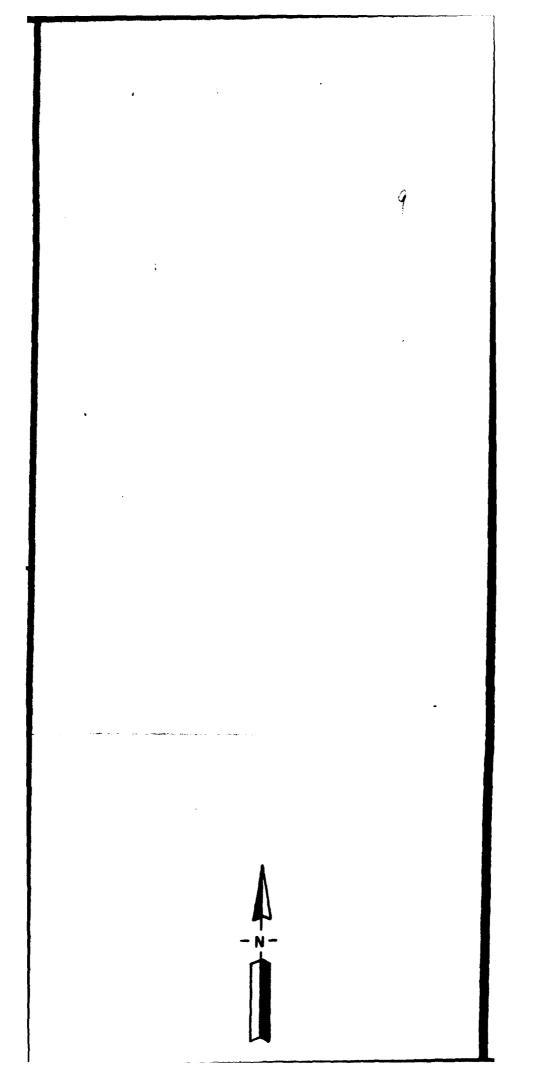
[---- Plugged Line

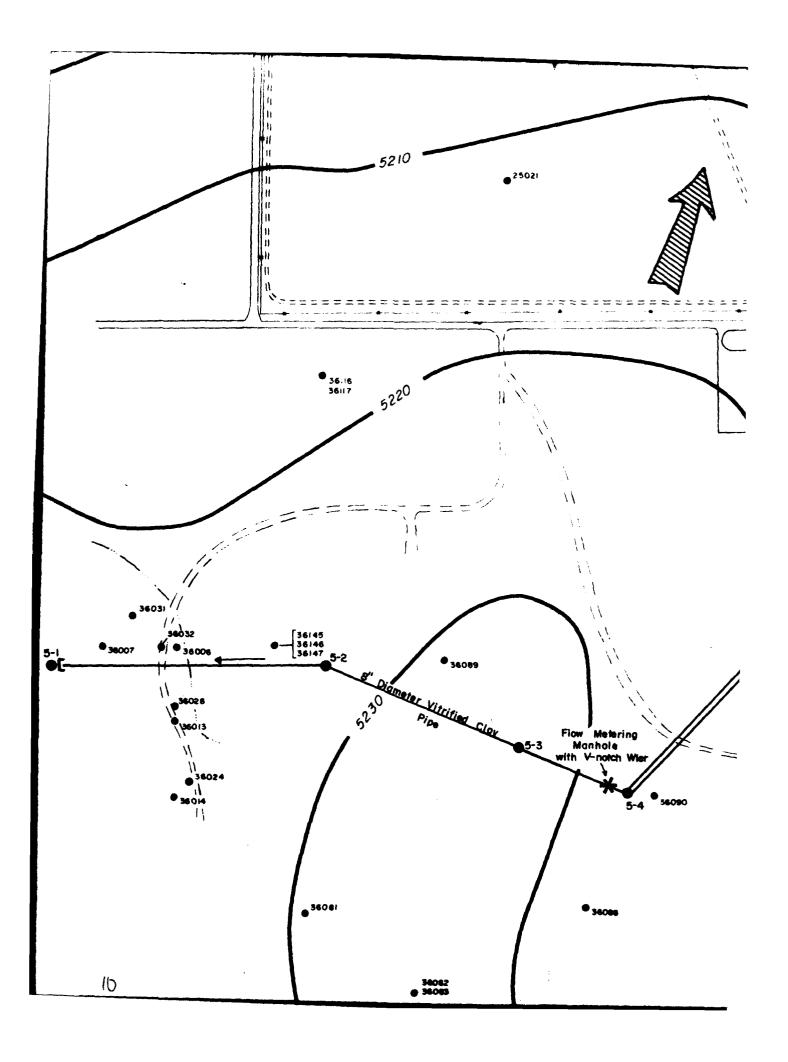
* Fence

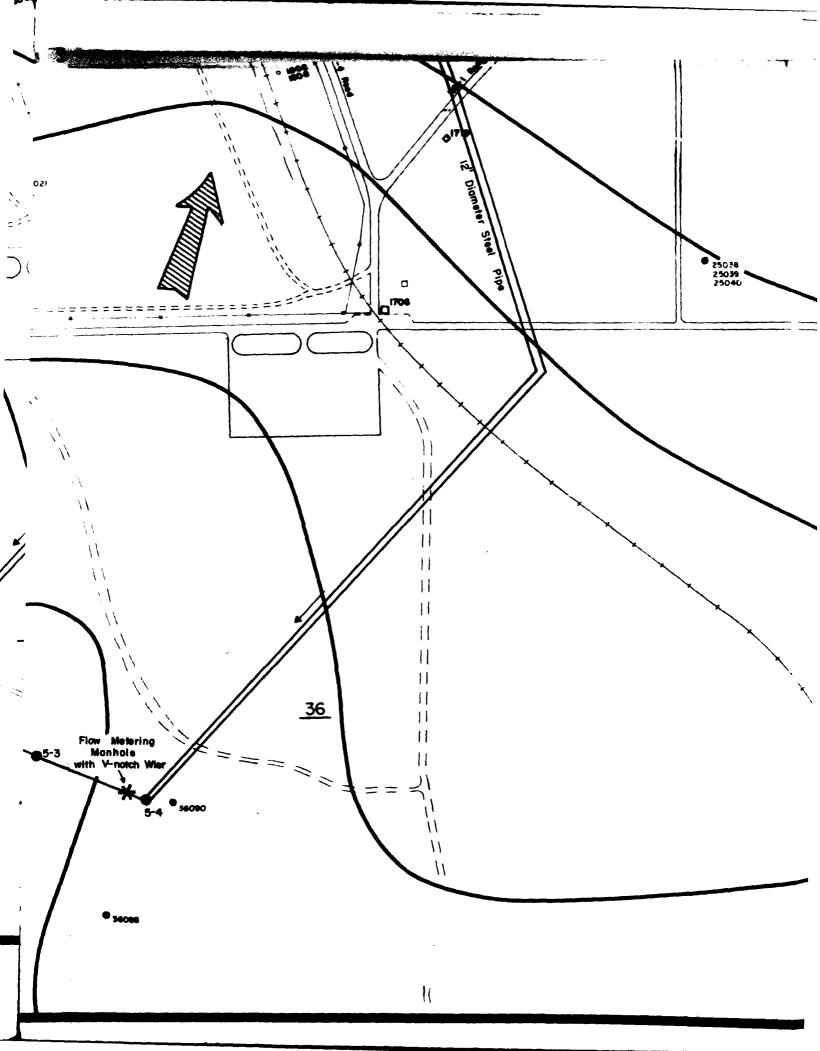
Note: All piping is cast iron unless otherwise noted.

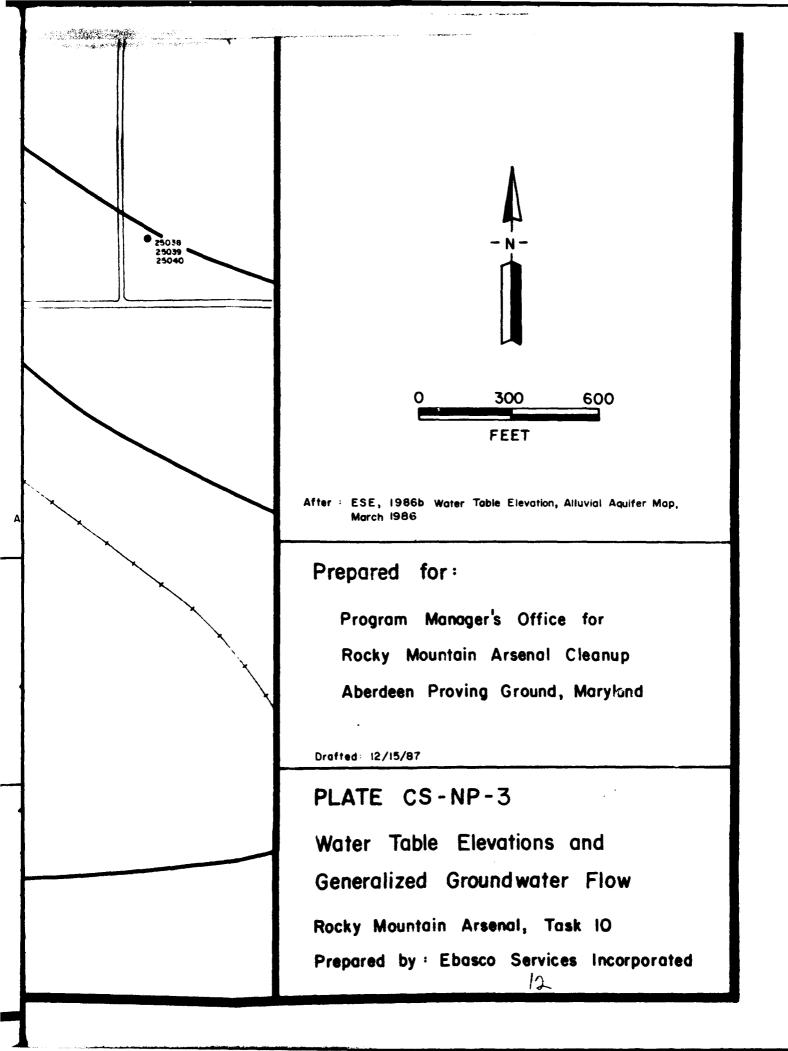


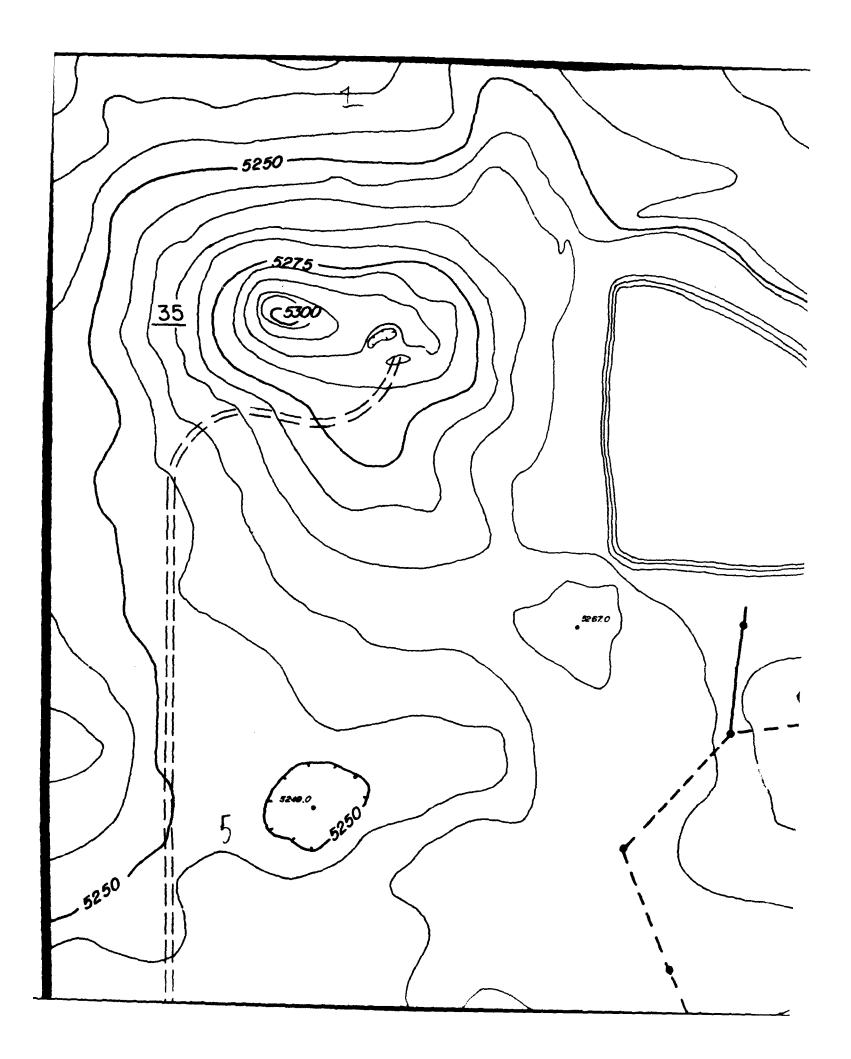


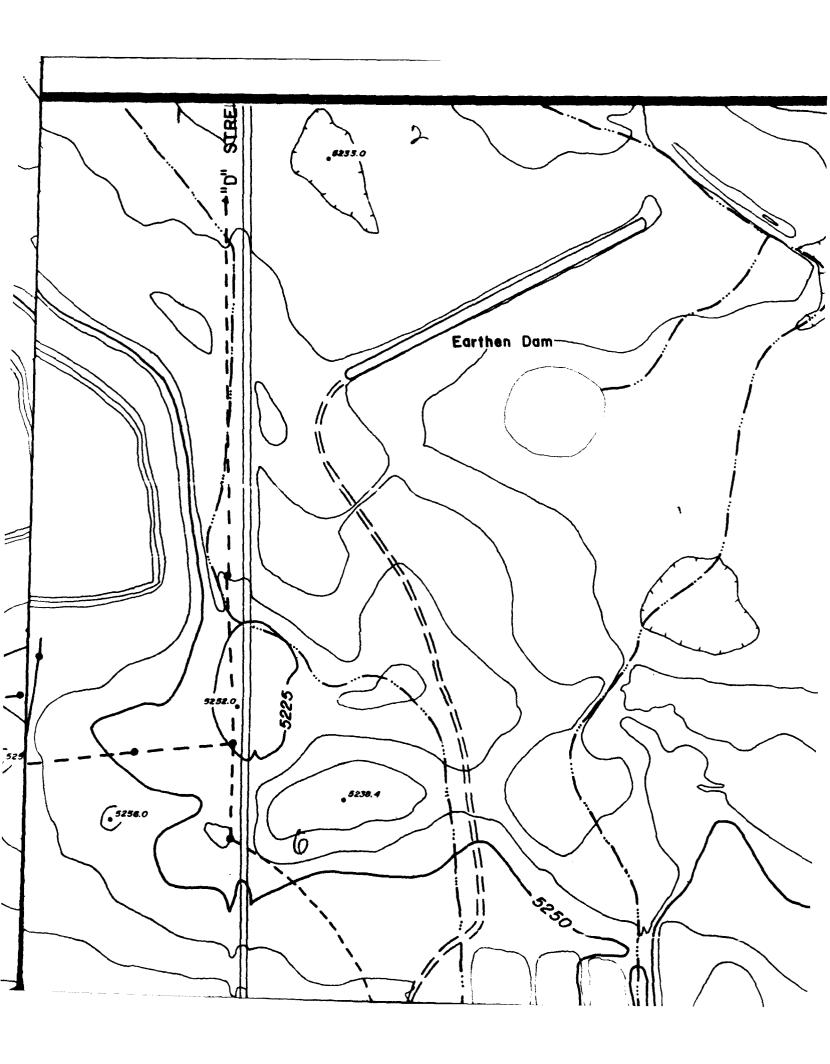


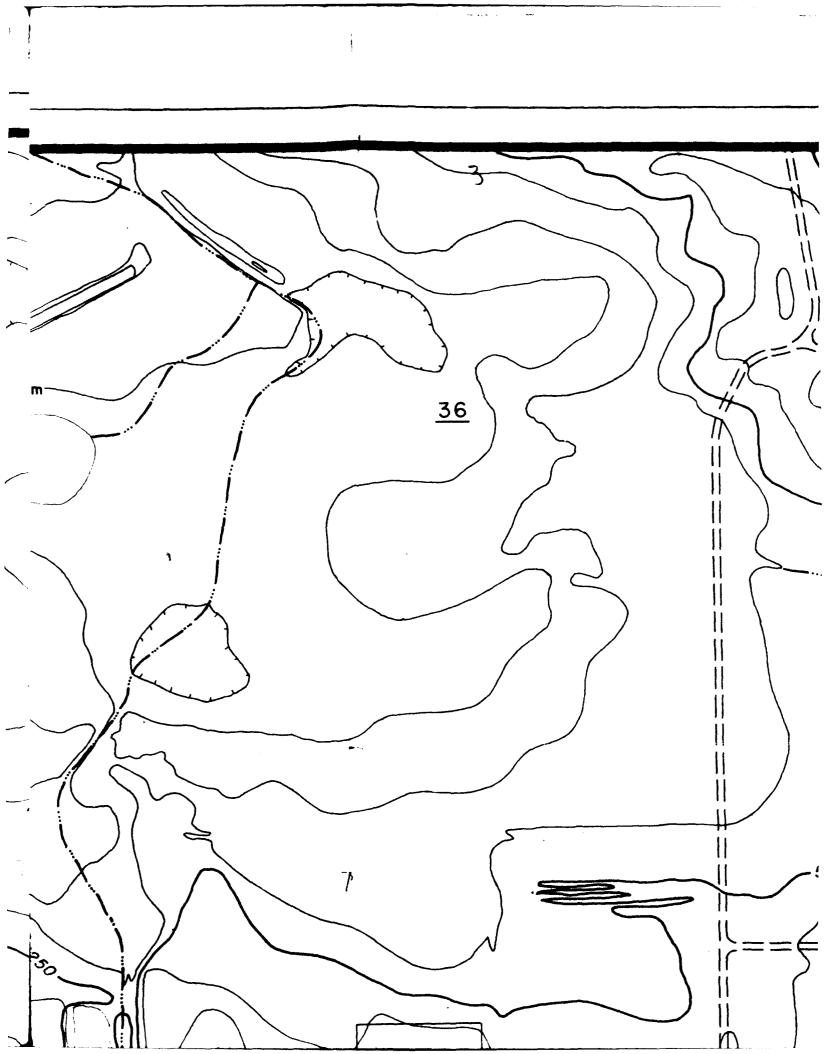


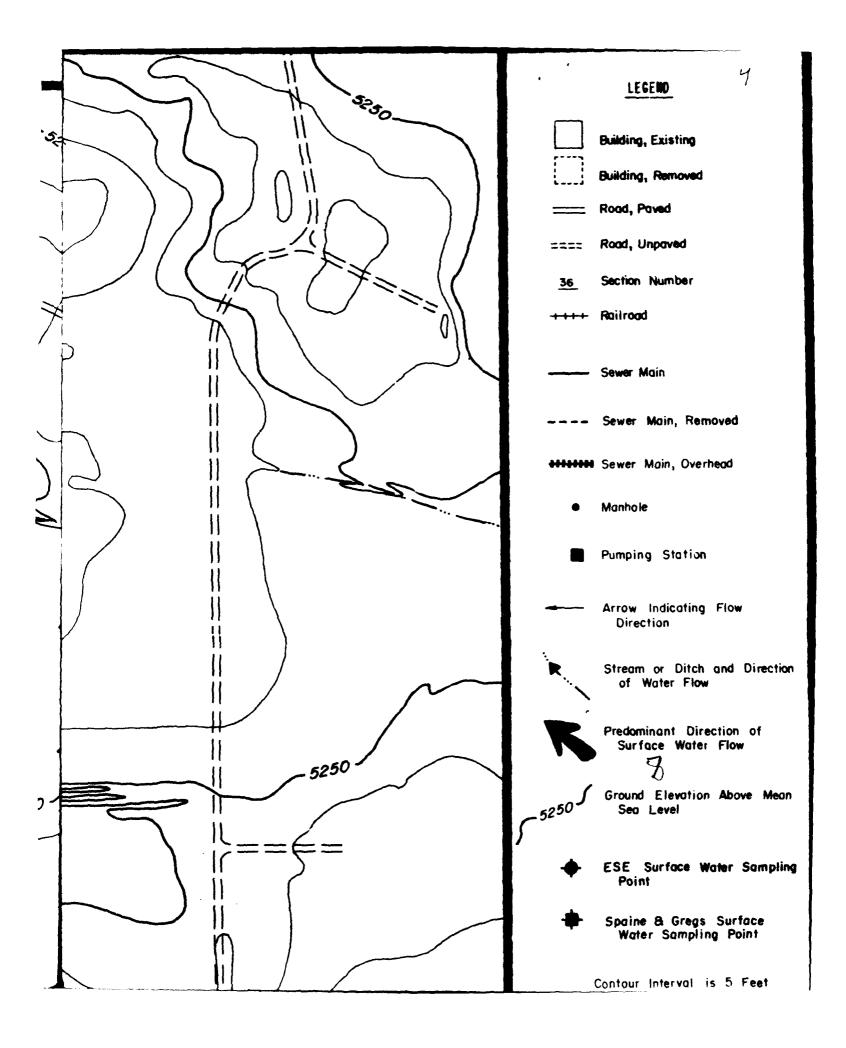


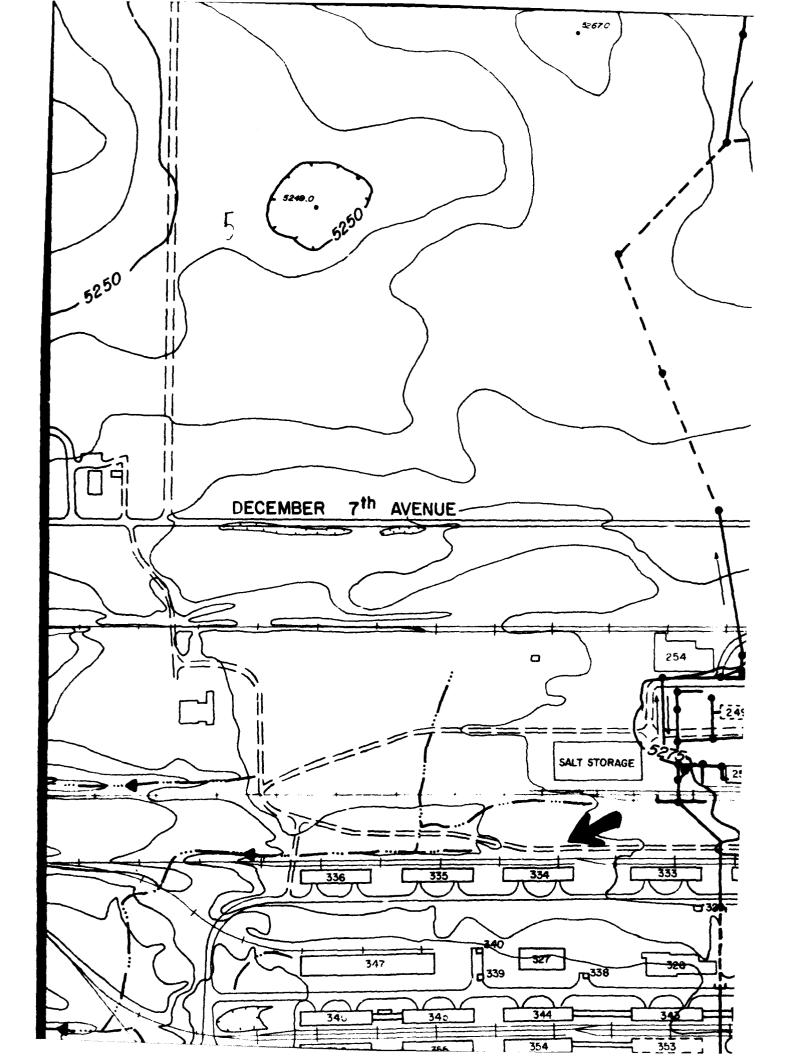


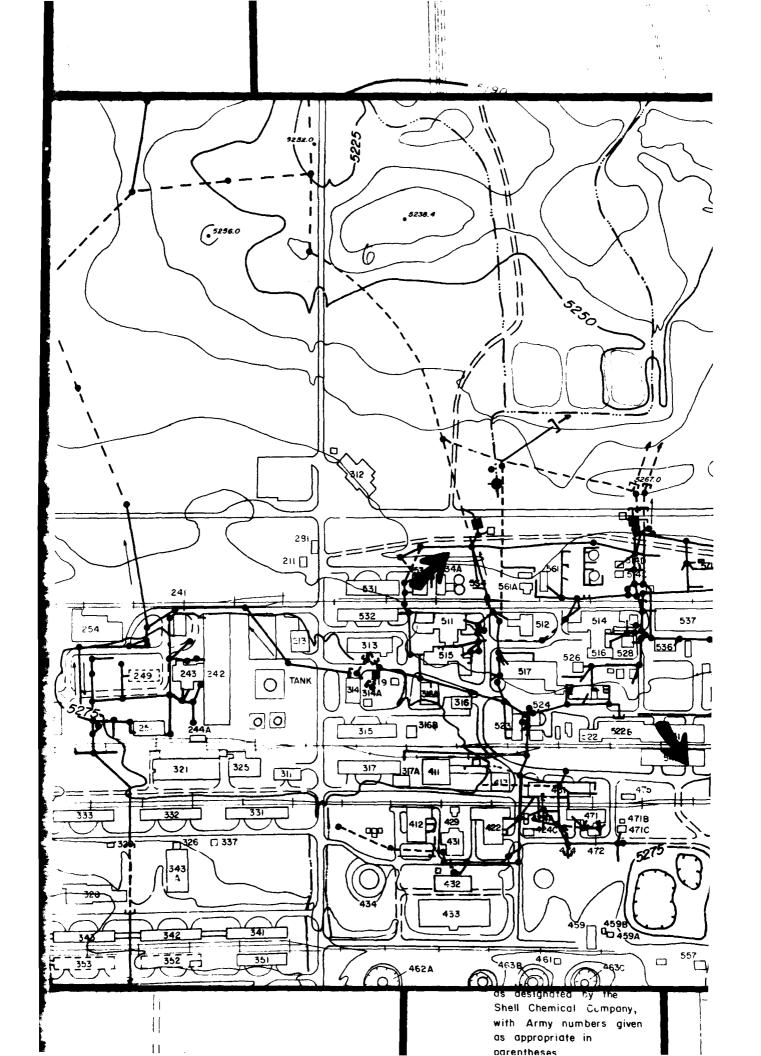


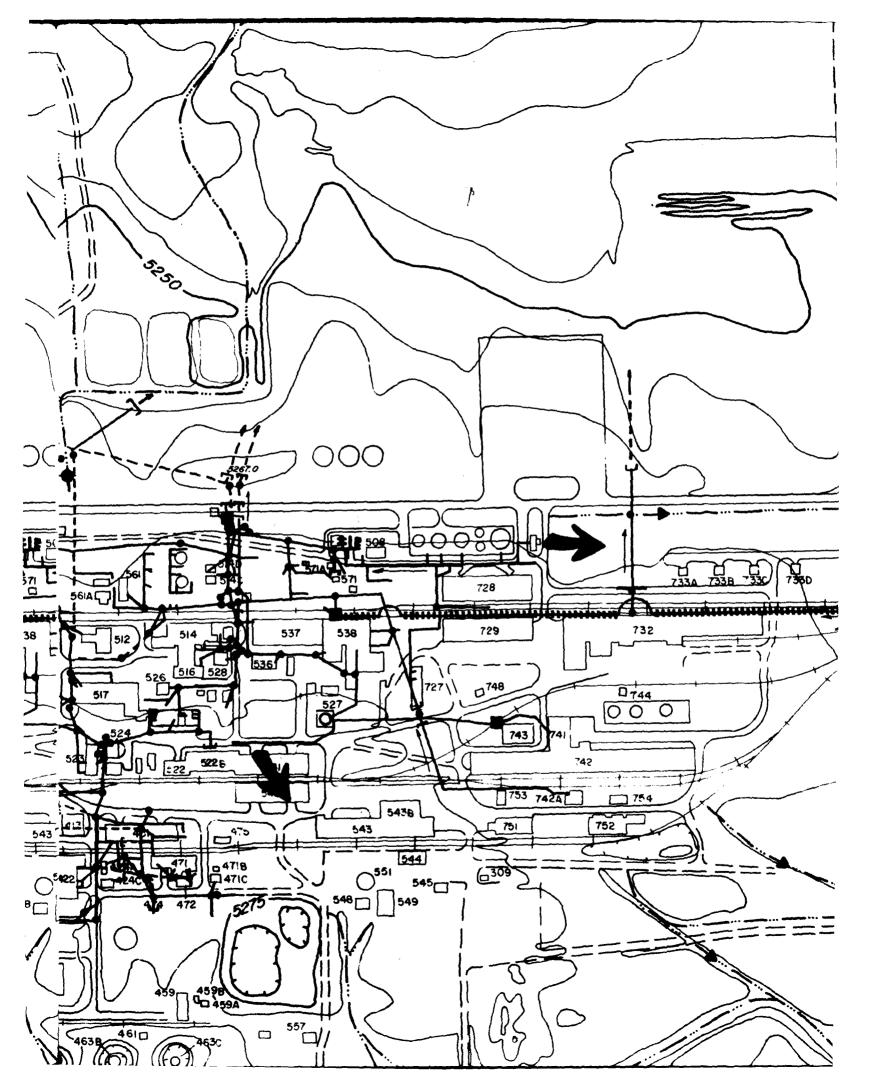


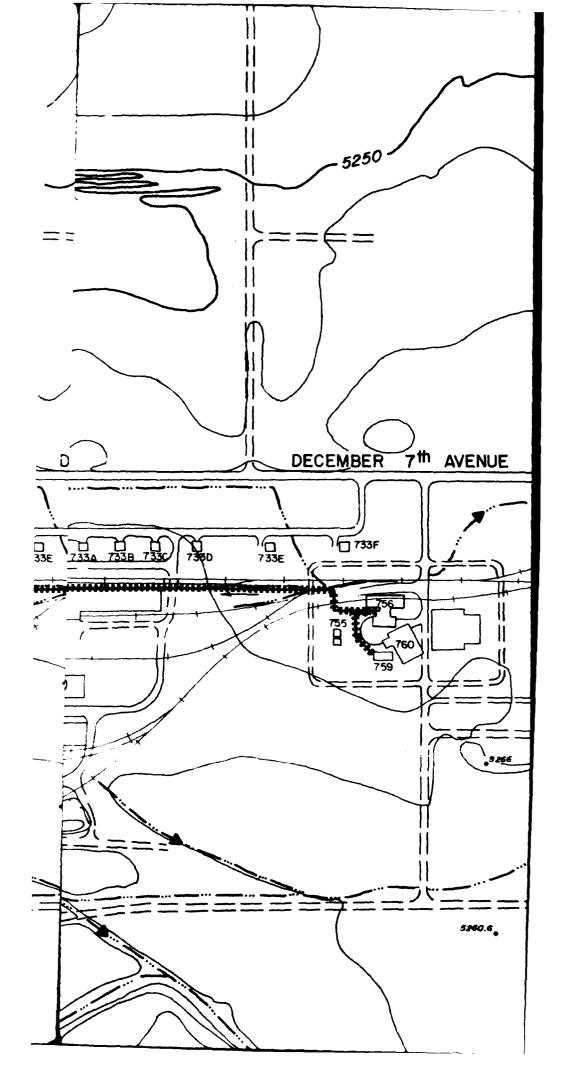


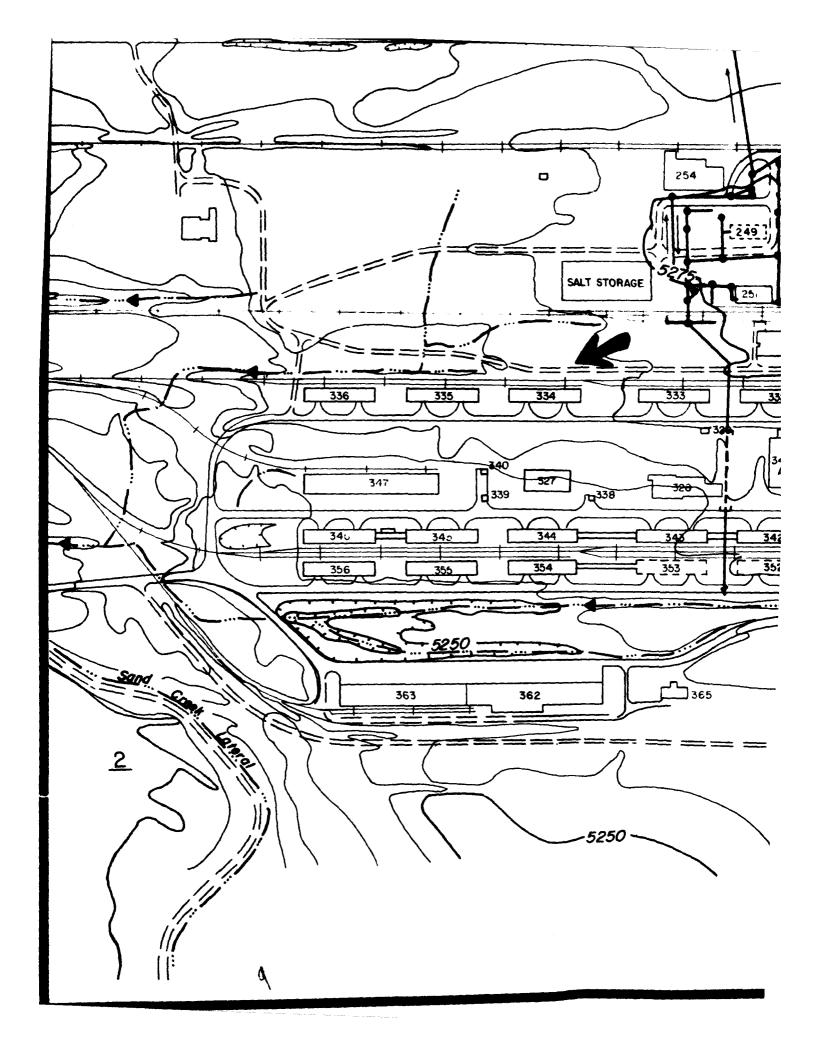


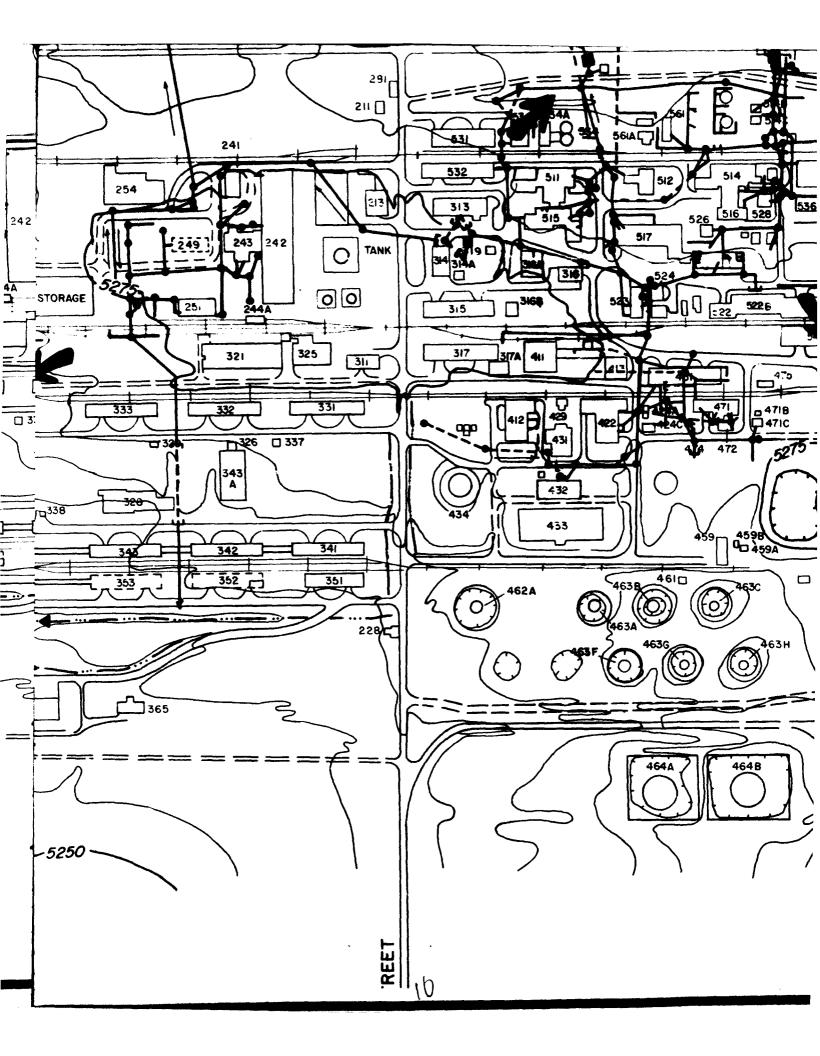


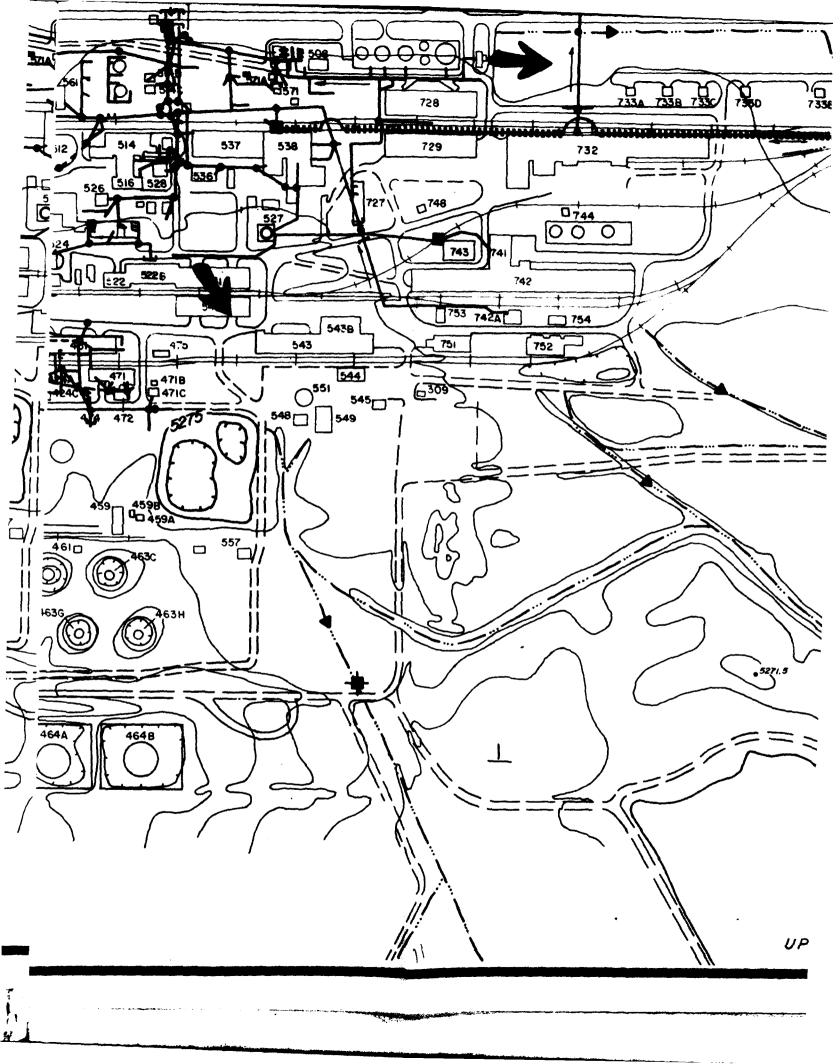


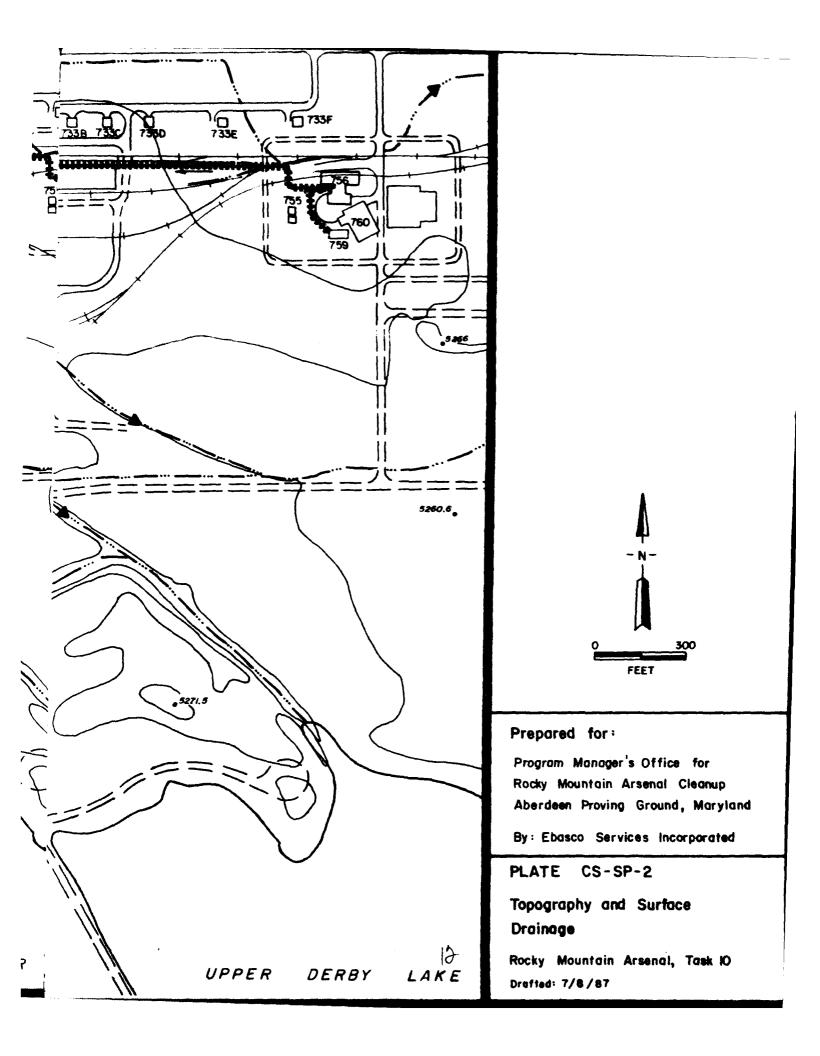


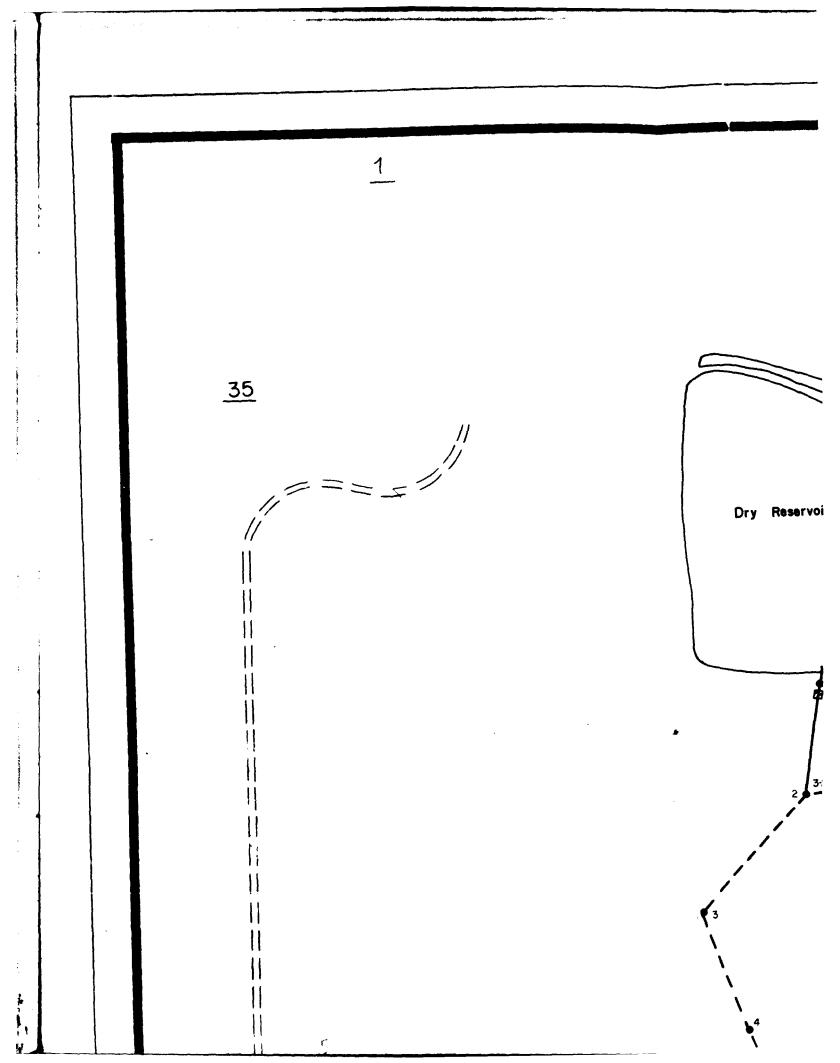


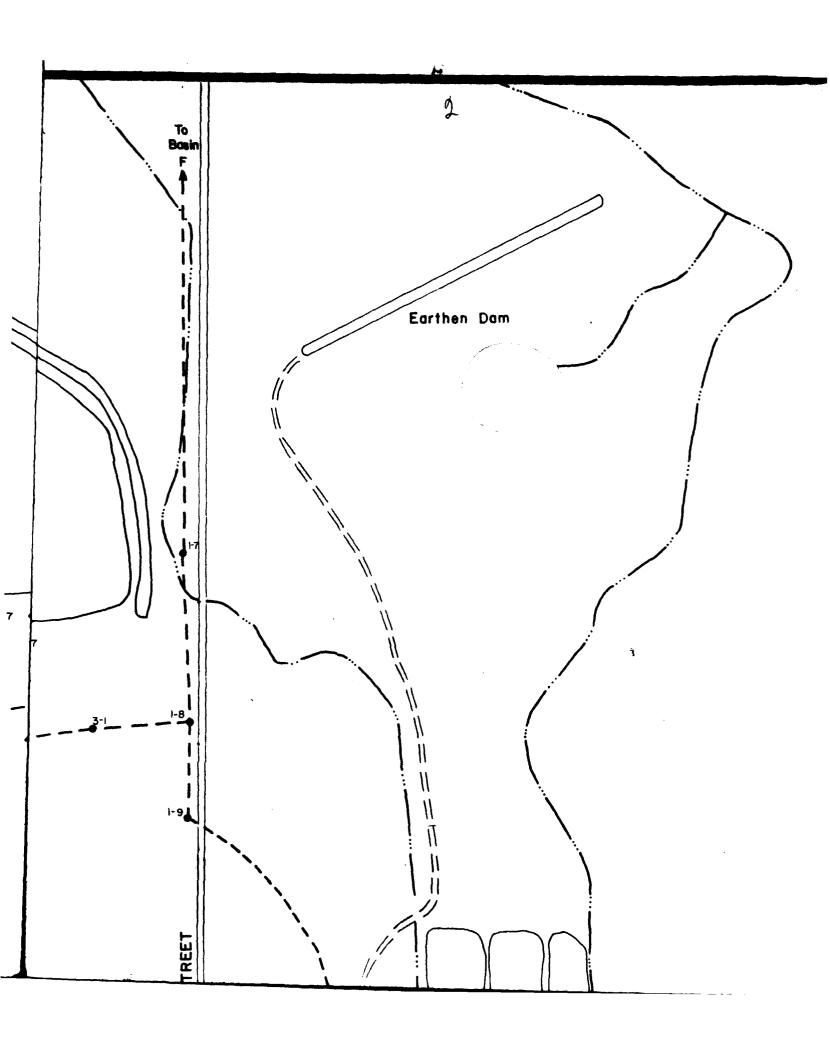


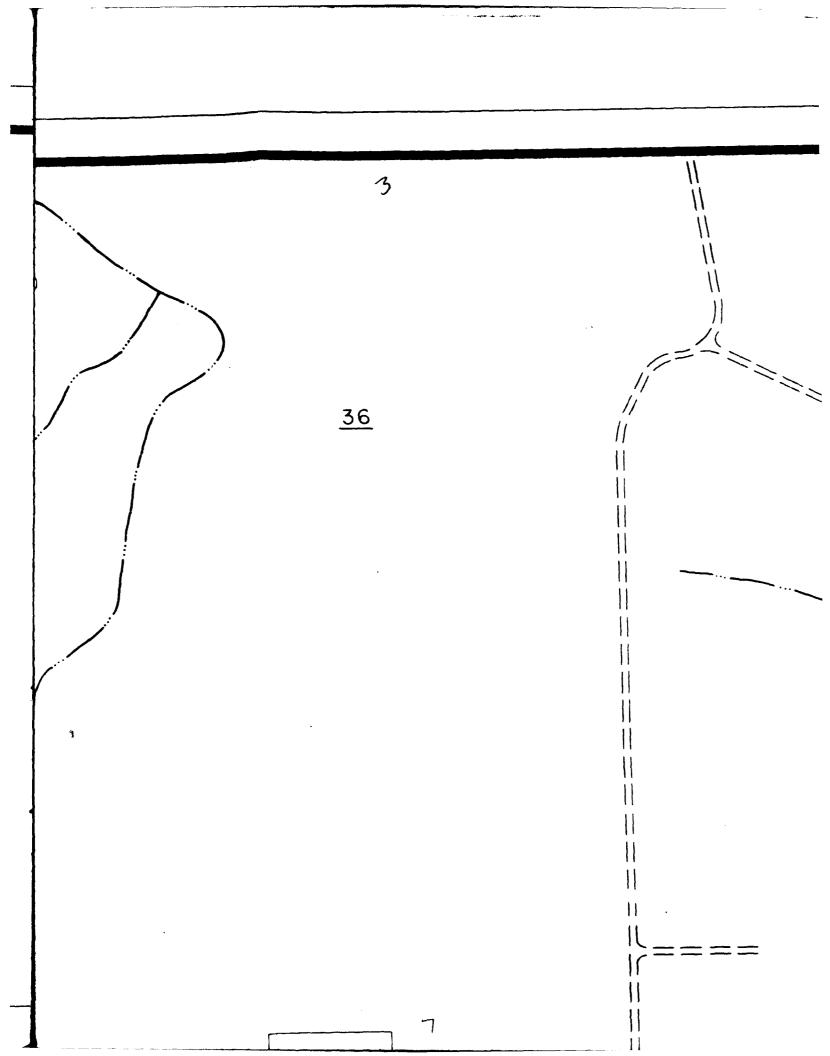












\\ \\	LEGEND
 	Building, Existing
\ <u>\</u>	Building, Removed
)\ /(Road, Paved
	==== Road, Unpaved
	36 Section Number
	++++ Railroad
	Sewer Main, with Size
	Sewer Main, Removed
	******** Sewer Main, Overhead
	^{W2l} ● Manhole, with Number
	Pumping Station
	Arrow Indicating Flow Direction
	Trench
	Note: Manhole numbers appear as designated by the Shell Chemical Company, with Army numbers given as appropriate in
	parentheses.

